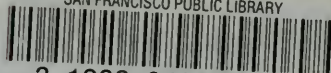


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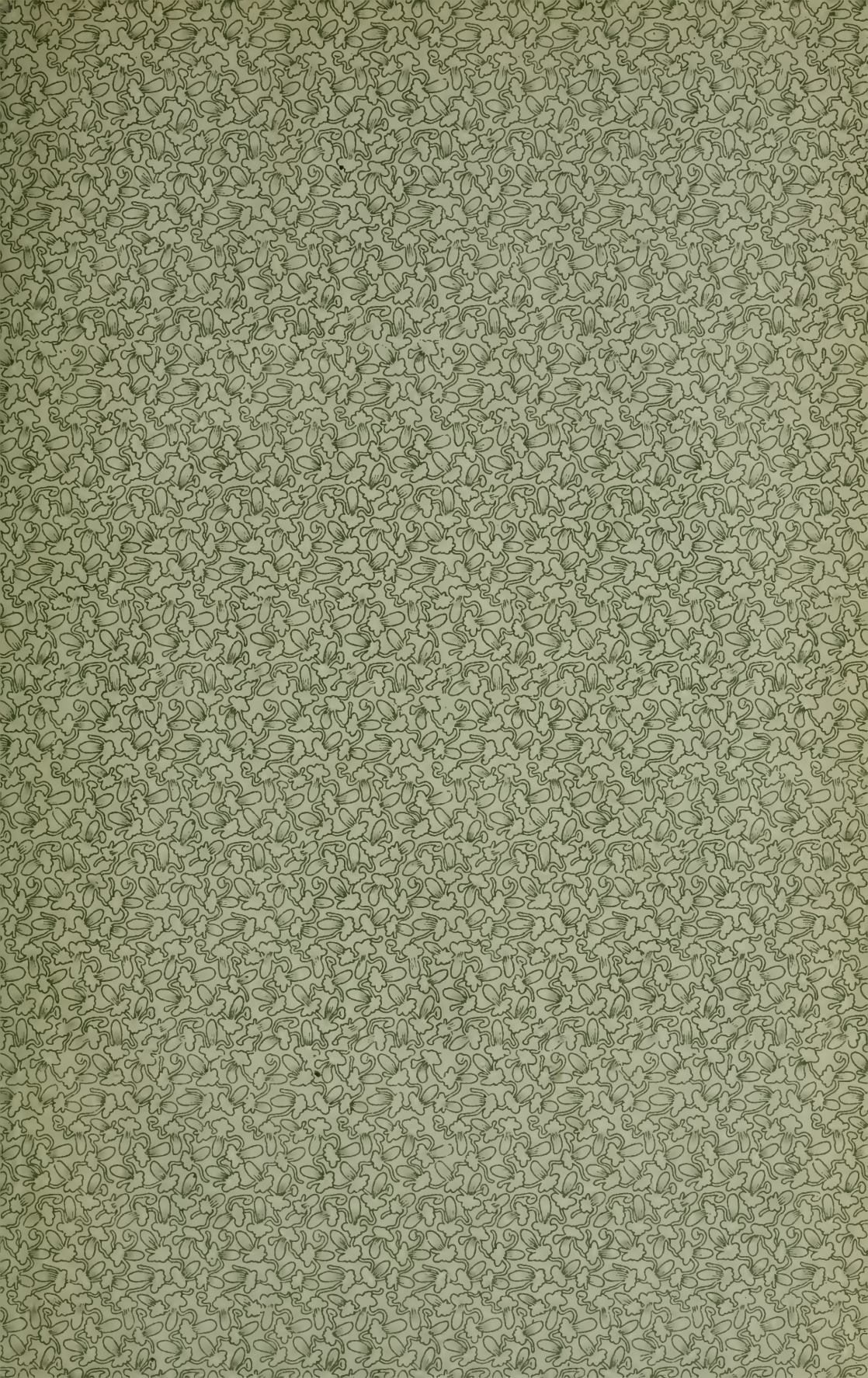
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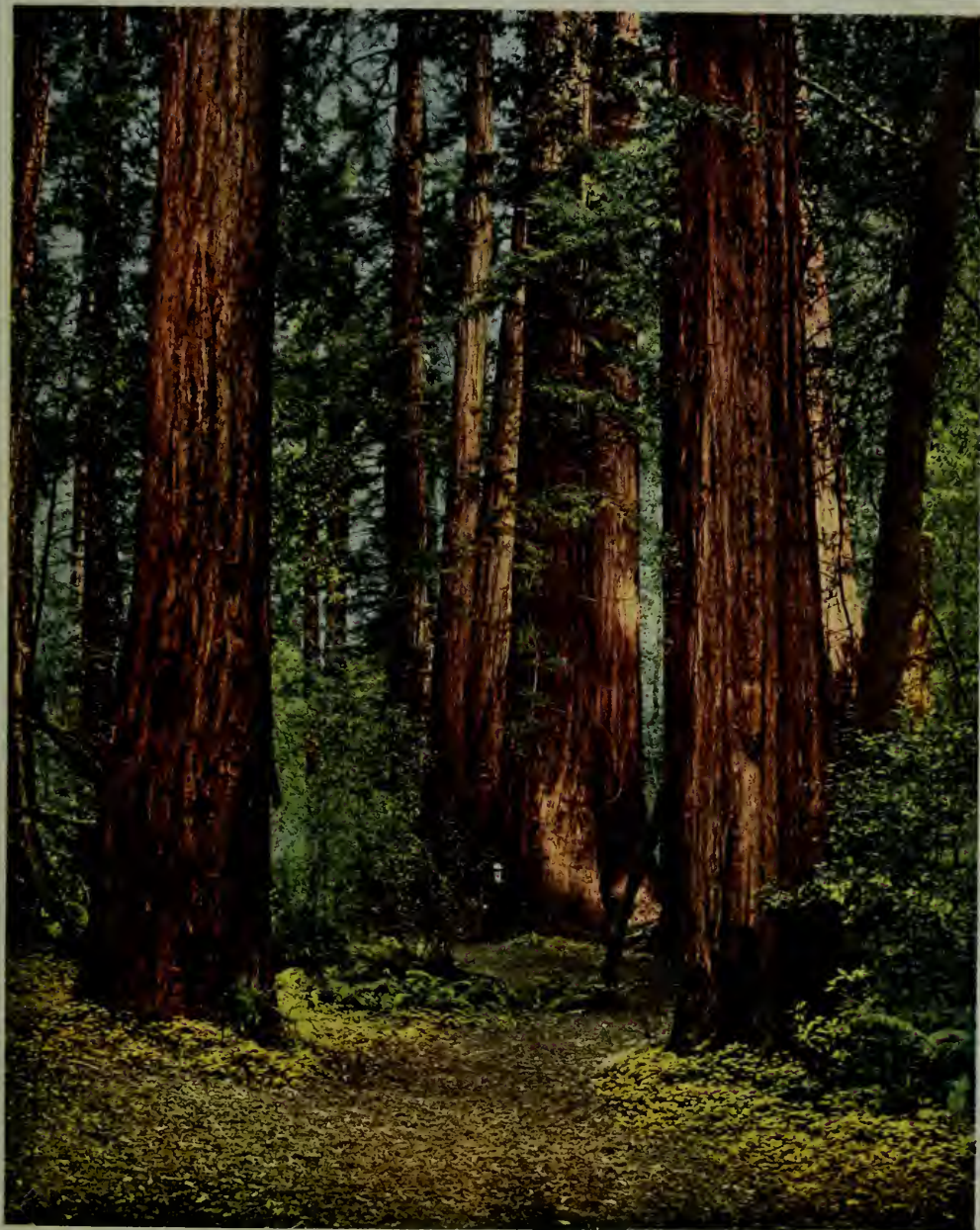
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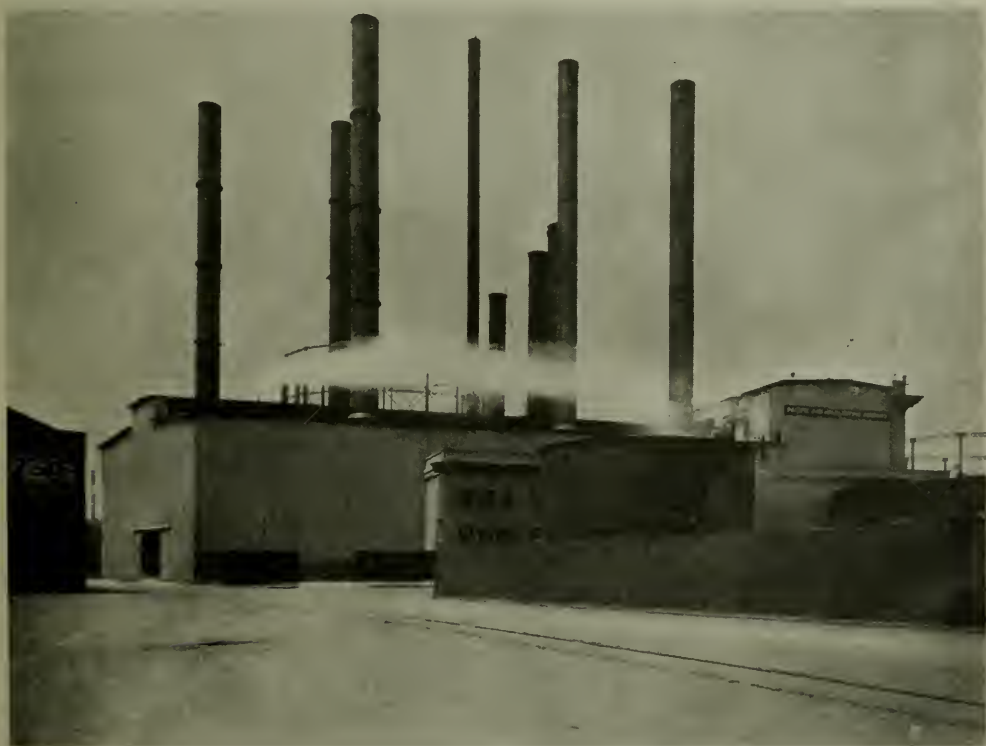
Practical features of an electrically equipped home. Reading from left to right, from the top down, these views show: electric washing machine; curling iron; sewing machine; percolator, toaster, etc.; kitchen; reading lamp and room heater; vacuum cleaner.

The New Steam Turbine Installation At Station "C" Oakland

By C. H. DELANY, Assistant Engineer of Operation.

Early in March, 1920, it became apparent that there would be a serious shortage of hydro-electric power during the following summer. The winter had been unusually mild, and at the end of February the amount of snow on the ground in the mountains was only about one third of that usually found at that time of year. It was, therefore, decided that an attempt should be made to install a steam turbine either in one of our present plants or in a new plant at some

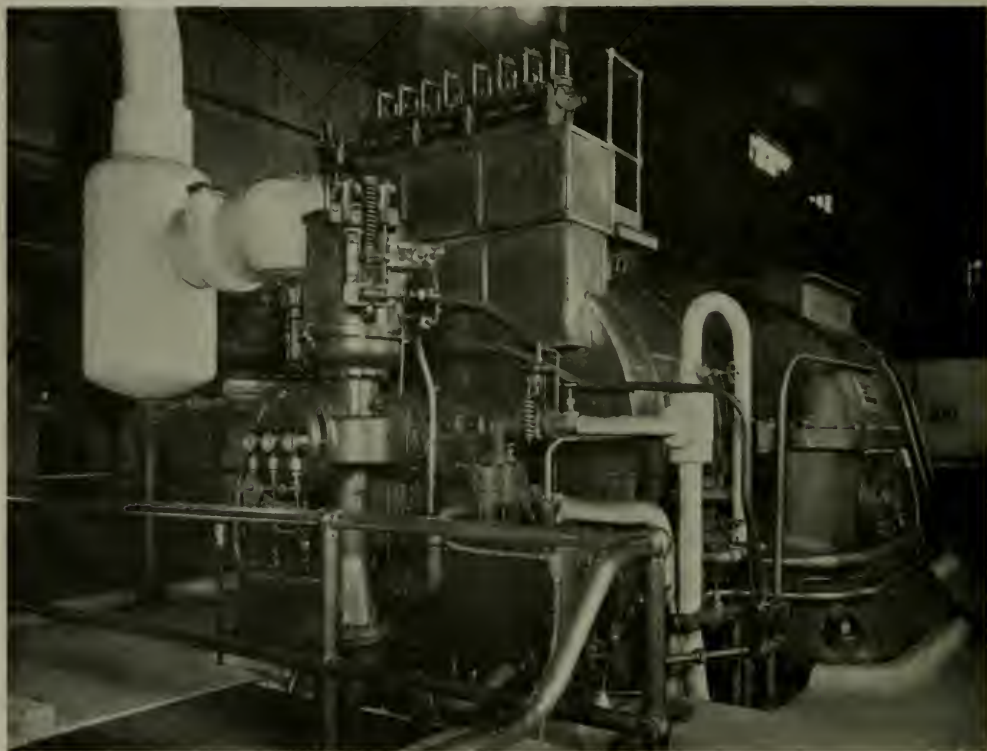
location not then decided. It was felt that if prompt deliveries of machinery could be obtained it would be possible to place a new unit in operation by the end of October, and if the rains of the following winter should turn out to be as late as they had been during the two preceding winters this installation would be of assistance in tiding us over until there was sufficient water in the streams to enable the hydro-electric plants to operate at full load.



Station "C," Oakland, showing on the left the new boiler-room addition.

It happened that at this particular time business all over the country was at its height. All factories were loaded down with orders, deliveries were slow and the congestion of freight was most serious. It was out of the question under these conditions to secure prompt delivery on a new order for a steam turbine, and the only solution was to secure a machine that had already been ordered for someone else, and that might be

to operate this turbine, and, as this other purchaser could wait a few months, it was possible to deflect these boilers to our Company and order new boilers for the other purchaser. The six boilers were therefore ordered in March, with the promise that shipment would be made during June. The condenser for the unit was the chief stumbling block, as there appeared to be no condenser available that could be released from



The new 12,500 K-W Steam Turbo-Generator, installed at Station "C," Oakland.

available for purchase. The country was scoured for available turbines, boilers and condensers. It was found that the General Electric Company had a 12,500 K. W. turbo-generator going through the shop which would be ready for shipment in July and which was available for purchase. This unit, therefore, was ordered on March 15, 1920. It was also discovered that the Babcock & Wilcox Company had on order, for another purchaser, boilers that would be suitable

some other purchaser. The C. H. Wheeler Company, however, advised us that if we would order a condenser that would be a duplicate of the condenser purchased from them in 1918 for installation at Station "A," San Francisco, it would be possible for them to make use of patterns already on hand and, by saving time in this way, they believed that shipment could be made during July.

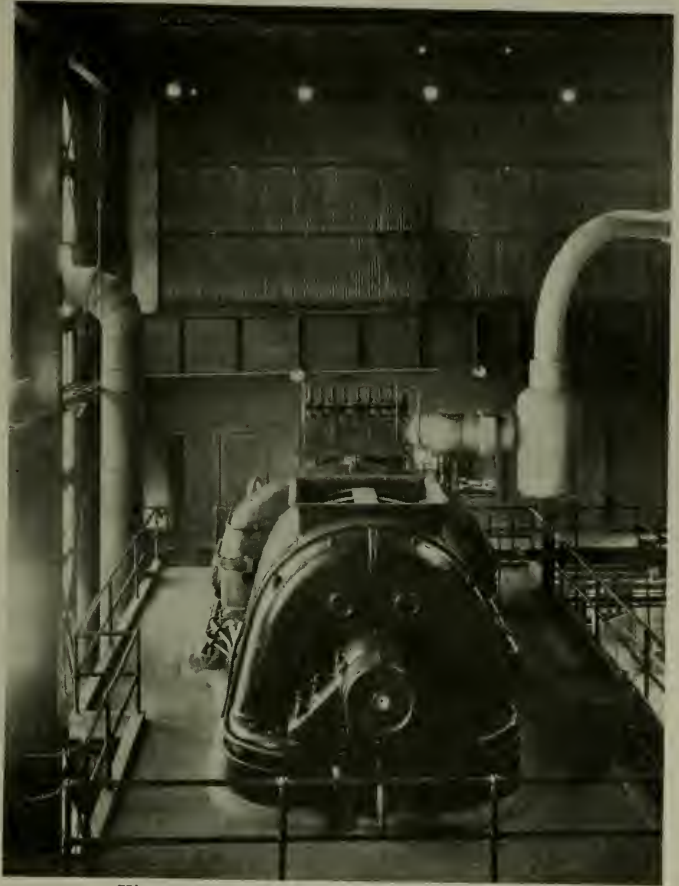
Up to this time, the location of the plant had not been determined. Con-

sideration had been given to the building of an entirely new station at some location to be found that would be suitable so far as condensing water was concerned and, at the same time, be conveniently located to the high tension lines, so that the energy from the new station could be readily transmitted to the entire system. Had a larger turbine been selected, it is possible that this would have been the ultimate solution. With the selection of a moderate sized turbine, however, it was at once apparent that the logical place for it was at Station "C," Oakland. Here space was already available in the turbine room for a turbine of this size, a circulating water system of sufficient capacity to take care of this additional unit was already provided, and there was room on the

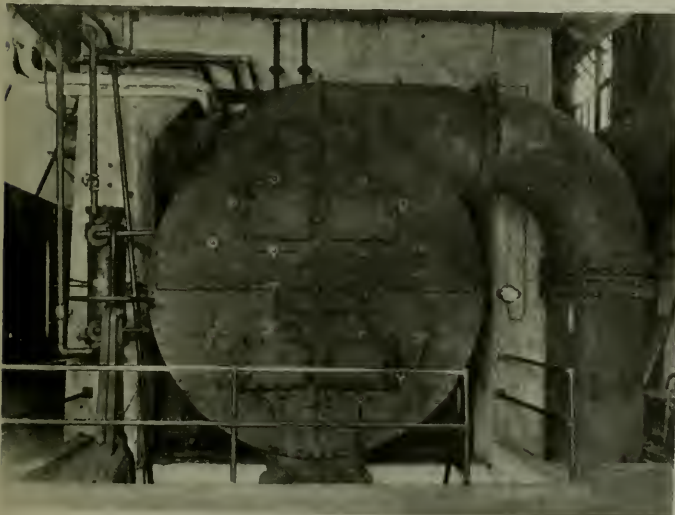
property to erect a building extension in which to house the boilers. Moreover,

it was found practicable to transmit the additional energy to the high tension lines, at such times as it could not be absorbed by the Oakland load, by means of a new tie line as far as Station "H," at 23rd Avenue, and the installation of additional transformers there.

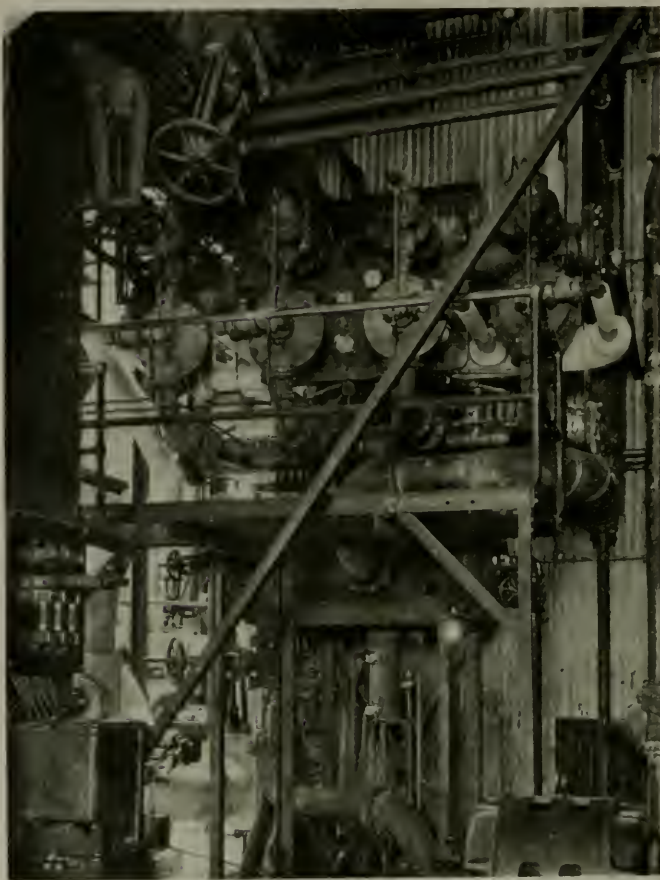
It was estimated that, with the promises that had been secured of deliveries of the main apparatus, it would be



View of the Turbine from the Generator end.



The 25,000 square feet C. H. Wheeler condenser.



Rado-Jets and after-condenser, for removing air from the main condenser.

possible by working day and night to get the plant into condition to carry load late in October, or early in November, which would be in time to be of some assistance in tiding over the short water season if the rains were late in coming. The boilers were shipped on time, the turbine was about one month late, but unfortunately the condenser was badly delayed on account of the labor situation at the factory, and was not shipped until late in November. In fact, the final earload of condenser equipment did not arrive at Station "C," until December 31st. Fortunately, the shortage of power was relieved by early heavy rains which occurred in October, so that the delay in completing the installation did not affect the operation of the system.

Owing to the delay of the condenser, it was useless to work nights on installation of the turbine and boilers. After the condenser was installed some large piping had to be connected up, the turbine had to be balanced up and the generator dried out. The turbine was finally placed on the line with a load on March 15th, 1921, just one year after the order had been placed.

The turbine is a horizontal G. E. 12,500 K. W. unit, operating at 1800 R. P. M., direct connected to an A. C. generator, generating 3 phase 60 cycle current at 12,000 volts. The condenser is a surface condenser, containing 25,000 square feet of cooling surface, built by the C. H. Wheeler Mfg. Company of Philadelphia, and designed to produce $28\frac{1}{2}$

in. of vacuum when using salt water at 60° temperature. There are six Stirling boilers, class M, No. 30, built by the Babcock & Wilcox Company, rated at 823 H. P. each, erected in three batteries of two boilers each. Each battery is provided with a steel smoke stack 90 inches in diameter by 150 ft. high above the ground. The boilers are provided with Leahy oil burners, capable of operating the boilers at 150 per cent of their rating. With this overload it is possible to carry the full load on the turbine with only five boilers, so that one boiler can be shut down for cleaning and overhauling at any time. This makes the full capacity of the turbine available for the system at all times. The boilers are provided with large combustion chambers, and

with four pass baffling, which we have found in other installations to give excellent results.

A feature of the design of this installation is the high steam pressure for which the machines are built, namely, 250 lbs. This is the highest pressure we have as yet used at any of our plants, and with the high superheat of 150° gives a total temperature of steam a little more than 550° F. This high pressure is in line with modern engineering practice. The best efficiency in a steam engine of any sort is obtained, theoretically, when there is a maximum difference in temperature between the steam entering the machine and the exhaust steam leaving the machine. It is, therefore, essential to maintain the steam temperature as high as possible and the exhaust temperature as low as possible. The low exhaust temperature is obtained by high vacuum in the condenser. The high steam temperature may be obtained either by high pressure or by high superheat, or by a combination of both. The high pressure causes the high temperature to last through a longer part of the range of expansion than high superheat. Thus, it more nearly approaches the condition of maximum efficiency. With a pressure of 250 lbs., it is possible to obtain about 2 per cent better efficiency of the turbine than with a pressure of 200 lbs. such as we have in our other steam electric stations.

In addition to the main units described above, the installation includes all auxiliary apparatus necessary for a

complete power plant. The condenser auxiliaries include rado-jets instead of a dry vacuum pump. These are similar in all respects to the rado-jets installed on the Wheeler condenser at Station "A," San Francisco, and which have proven most successful. There are two hot well pumps, one motor driven and the other turbo-driven, in accordance with our usual practice. The circulating water pump was built by the Byron Jackson Iron Works of San Francisco, and is driven by a Westinghouse geared steam turbine. By making use of the gears between the turbine and pump it is possible to operate both pump and turbine at the best speed for high efficiency. This circulating pump is connected into the main circulating system of the plant, which is already provided with one motor-driven and one engine-driven pump. These pumps have been provided with check valves, which were specially designed to go into the small space available by the Joshua Hendy Iron Works. By the installation of these check valves the entire circulating water system is made more reliable and more flexible than it ever was before. An oil filter, manufactured by the Richardson Phoenix



The new Circulating Water Pump, driven by a 425 h. p. geared steam turbine.



Six 823 h. p. Stirling Boilers, generating steam at 250 lbs. pressure.

Company of Milwaukee, is provided to filter the lubricating oil for the turbine. This is connected so as to pass a portion of the oil through the filter at all times without in any way interfering with the circulation of the main body of oil through the turbine bearings. The generator is provided with an air washer to insure the cooling air for the generator being pure and clean. The two older steam turbines in this plant are also being equipped with air washers, and the three air washers are being connected together with a single pumping system for their water supply.

The boiler auxiliaries consist of feed water pumps and heaters. The two feed water heaters are of the open type. This type of heater is of material assistance in purifying the feed water, as the air and dissolved gases are driven out of the water when it is heated at atmospheric pressure, and, moreover, some of the scale-forming matter in the water de-

posits in the heaters instead of being carried on into the boilers. The heaters are provided with large storage compartments, so that an ample supply of pure hot water is available at all times. The heaters are set on an elevated platform so as to give ample head to the feed pumps. The feed pumps are of the centrifugal type, built by the A. S. Cameron Steam Pump Works, and are driven by Sturtevant steam turbines. The oil heaters are of the coil type, having external joints so that any leak in a joint of the coil is immediately noticed and can be promptly stopped. The oil passes through the inside of the coils at a high velocity, so that a good heat transfer is obtained. The oil pumps are of the piston reciprocating type and were built by the Dow Steam Pump Works of San Francisco. Each pump is of sufficient size to supply fuel oil to the whole plant, the old boilers as well as the new. A fuel oil storage tank has been installed,

of 15,000 barrels capacity. This tank was moved from the old North Beach Gas Works, where it had been lying idle for a number of years. The tank was in excellent condition, except for a few slight repairs that were necessary. The tank is surrounded by a concrete retaining wall of sufficient capacity to hold its entire contents in case of a leak, thus protecting the surrounding property.

A feature of this new installation is the measuring devices that have been provided for keeping track of the efficiency of the plant and assisting the operating men to know just what results they are obtaining. In modern engineering practice it is becoming more and more apparent that complete installation of meters is essential to securing high efficiencies of steam plants. The meters at this plant are under the care of Mr. M. E. Mulkey, to whom the writer is indebted for the following description:

"Each boiler is equipped with its own individual flow meter. These meters were made by the Bailey Meter Company of Cleveland, Ohio. Each meter is practically three separate meters in one case, but all three recording their information on one and the same chart. The steam flow part of the meter records the steam output of the boiler in per cent of boiler rating, thus showing at a glance just what load the boiler is carrying. On the same chart the air flow pen records the amount of air the fireman admits to his furnace and fires.

"When all adjustments are correct, the air flow

record and the steam flow record should practically coincide at all loads, providing the turbine takes steam at a steady rate. The air flow mechanism is very sensitive and every time the fireman moves the damper the air flow pen quickly adjusts itself to a new position and the fireman knows that if his fires are set right the steam flow pen will soon take a corresponding change and coincide with the air flow. By this chart an accurate record is kept of how the fireman attended to his damper during his shift.

"In the same meter casing and recording on the same chart we have a mechanism that indicates and records the temperature of the superheated steam. This consists of the well known Nitrogen bulb and flexible tube connected to a helical spring which actuates



Feed Water Heaters and Feed Pumps.



Meters for measuring feed water and atomizing steam for the new boiler installation.

water is leaving the condensate line, and the integrator giving the total flow for any period of time. From the records of this meter we can determine the water rate of the turbine at all times and it will show any defects that develop in the turbine to cause an increase in the water rate.

"On the steam line to the burners there is a General Electric flow meter. This is an integrating, indicating and recording flow meter. The indicating scale being

the recording pen. This record will show up any defects in the superheater, or any water that may be carried over with the steam.

"On the feed water line we have a Bailey flow meter of the type C-2. This meter is equipped with two recording pens and an integrator. One of the recording pens shows a continuous record of the flow of water from the feed pumps to the boilers. This shows how closely the water-tender regulates his valves on the feed line, the object always being to have this record as smooth as possible. On the same chart the second pen shows a continuous record of the feed water temperature.

"The integrating attachment works in conjunction with the mechanism which records the rate of flow of the feed water, and records the total flow of water fed into the boilers during any period of time. From this information we can figure the evaporation per pound of fuel burned.

"On the condensate line from the turbine there is another Bailey meter of type C-6. This meter has only one recording pen and an integrator, the recording pen showing at all times how much

visible for a great distance, the fireman is always able to tell how much steam he is using to atomize his oil, without having to walk up to the meter to read it. The recording pen shows a continuous record of how the fireman handled his steam. The integrating attachment gives the total steam passing by the meter in any period of time. From these records we calculate the percentage of atomizing steam to total steam generation, and the pounds of steam used for atomizing per pound of oil burned.

"On the oil line to the burners there is a constant temperature control meter. This meter is set at the temperature at which it is desired to feed the oil to the burners, and by means of a thermostatic control valve this temperature is maintained."

The installation of the main units and building foundations was done by contract, but the piping and the various auxiliaries were installed by our own men under the supervision of Mr. H. N. Mosher, East Bay division superintendent of steam electric generation. The building extension and the boiler and turbine foundations were designed by Mr. I. C. Steele, and the design of piping and arrangement of auxiliaries was done in our own drafting room under the supervision of Mr. Henry Bosch.

Co-operation Between the Public and the Public Service Industry

By W. E. CREED

The following is the fifth of a series of short papers by our company's president on matters vital to the public service, particularly the problems in whose satisfactory solution the public service corporations and the public they serve are mutually concerned.—EDITOR PACIFIC SERVICE MAGAZINE.

To a very large extent, the modern public service company in California is owned by the public. There is absolutely no concentration of ownership in a few hands. Approximately forty-one thousand individuals own the stocks, bonds and other forms of securities of the Pacific Gas and Electric Company. The other public service companies in California also have large numbers of stock and security holders among their customers.

The modern tendency is to bring into the ownership of these properties more individuals so that in the near future it may reasonably be expected that a substantial part of the consumers of the service rendered will legally own the properties.

Management nowadays actually seeks to represent both the owners and the consumers. The public service industry both accepts and insists upon the proposition that the duty of management is not only to safeguard the property in the interests of the owners but also at the same time to safeguard the interests of consumers so that they get good service at a reasonable cost. The purpose of this policy is to develop a helpful and friendly co-operation between the industry and the public.

There is in it nothing illogical or inconsistent. The owners look to the consumers for the revenue to pay for operation and to pay a return upon the value of their property devoted to the public use; and the consumers, in turn, depend upon the owners to supply the money to meet the ever-increasing demands for service, to furnish the management and assume the risks incident to the business. To the extent that the consumers, who are the public, encourage and deal fairly with the owners, the quality of service improves and the cost to the consumers is reduced.

In the complete understanding of this mutuality of interest will be found the basis for co-operation between the industry and the public. No one thing seems to be needed more than this. It is the principal aid to the industry in achieving good operating results and in securing satisfactory financing. As co-operation increases its aid to the industry, the public will benefit in proportion.

To bring about sound public relations, which create the conditions for co-operation, it is necessary that the organizations in the public service industry continue to be imbued with the spirit of service and a realization that the existence of the industry is for the prime purpose of promoting manufactures and agriculture and the comfort and convenience of the consumers. In other words, the industry must deserve the co-operation which it asks. On the part of the public there must be a thorough understanding of the fact that the costs of service are determined by economic conditions and not by the whim of management or the caprice of regulatory commissions, and that the public cannot hope to escape these costs, if service is to be maintained and the social and economic needs of the public met.

It is a fair statement to say that, as a whole, the industry has been completely revolutionized in the last ten years. Security issues are now made only with the approval of public authority; rate fixing is in the control of competent, unbiased experts; operations are confined strictly within the limits of the public purposes for which the companies were organized, and past policies, of which the public complained, have been supplanted by the present policies of service and frankness on which the public insisted. These new policies the industry has not only adopted but enthusiastically ac-

cepted as sound and desirable. In short, the industry does merit the co-operation which it seeks.

Unfortunately, the public is all too prone to keep alive memories of the past and to ignore the very fundamental changes which have taken place. There are still many who look upon rate hearings as essentially adversary proceedings between the public and the companies, even as proceedings initiated by the companies to get something out of the public to which they are not entitled. This attitude is neither just nor wise. The companies have very definitely and very properly taken the position that in respect of rates they accept what the facts accord them and that they will be as helpful as they can in presenting the facts. The public must likewise be willing to be bound by the economic facts which control and fix rates. It is axiomatic that service cannot be maintained for the present, or produced in time to meet the demands of the future, unless revenues are adequate to meet costs. What these costs are depend upon very definite, ascertainable facts. Rate inquiries should be regarded and conducted as mutual investigations of facts by the public and the companies for the purpose of squaring rates with the facts. By no means should they be turned into an organized effort by the public to accomplish the impossible through its insistence that economic facts be ignored and service be rendered for less than cost.

No one will question for a moment whatever of searching inquiry the public may demand in determining the facts, but once the facts are established, the conclusions as to rates which flow from those facts should be frankly accepted. The unwillingness of a considerable part of the public to do this very obvious thing marks its most conspicuous failure to co-operate with the industry. The folly of such a course is perfectly apparent. The public needs and depends upon the service of the industry. The economic law is inexorable. Service cannot be rendered unless revenues are adequate to meet the costs of service. Without adequate service communities do not prosper. The growth of many a city has been stifled because its public service industry was stifled.

In contrast with the failure of the public as a whole to accept the principles of rate fixing, there is the encouraging evidence of public co-operation to be found in the rapidly increasing number of stockholders in the industry. These stockholders are the legal owners of the public service properties. The door is open for the entire public to join them in the ownership of the properties. Probably the legal ownership will never extend quite this far but the entire public will always have an ownership in the properties in the sense that all may use them on the same terms and that none of the properties can be devoted to any use except a public use. Established principles in the industry compel the refusal of unreasonable demands on the part of some consumers, or of groups of consumers, which would work against the interest of the great body of consumers. There is always kept in mind the best interest of the consumers as a whole and no special rights or privileges are granted to individual consumers, or small groups of consumers.

This invariable rule against discrimination places the owners on the same footing as all other consumers in respect of the services of the companies. The owners must and do pay the same price for the same service as does every other consumer. In other words, the owners have no advantage or privilege as consumers. Their sole recompense as owners is a fair return on the value of their property, if their management is skilful and avoids the hazards inherent in great enterprises. In making their investments under these conditions, they render a substantial public service. They furnish and dedicate to public use the funds needed for developments in the interest of the whole public and the need is unending. Considering the importance to the public of such investments, there should be no hesitation on the part of the public in adopting the attitude of sustaining the public service industry against malicious and ignorant attack by demagogues who have no real thought of the good of consumers or the public, but follow only their selfish interests which they seek to promote by arousing opposition to the companies engaged in the industry.



The Thing that will Count Most if You Want to be Promoted

An Interview with Samuel Insull, President
Commonwealth Edison Company, Chicago

By ALFRED PITTMAN

The following gives the practical views of one of the best known public utility men in this country upon a subject of wide discussion in these days of rapid advancement. The article is reprinted from the American Magazine, issue of March, 1921, by the courtesy of Mr. John M. Siddall, editor of that publication.—EDITOR PACIFIC SERVICE MAGAZINE.

A YOUNG lawyer went, one day, to a friend of mine—a man who had been a sort of big brother to him—and said he had been wondering if he ought not to quit the profession. Business was not coming in, and he had begun to think that perhaps he wasn't cut out for a lawyer, after all. My friend, also, was a lawyer, and had been through that very same phase in his own career.

"No business at all in sight?" he asked.

"Absolutely not a bit!" the young man said.

"Have you followed up all your leads?"

"Yes—all that looked in any way promising."

"H'mm," commented the older man. "Then there were some that didn't look promising?"

"Why—possibly."

"I ask," the older man explained, "because these unpromising leads are often tremendously important.

And there always is some such lead lying about, some idea or other. Always! I've never known it to fail.

"I tell you what you do," he went on presently. "You go back, look through things once more, and see what there is that can be followed up. And don't skip anything because it looks small! You know what a lot of wool you can sometimes pull out with a raveling. Just try it, and then come back and see me."

When the young man came back he had finished a two hundred dollar job and

collected the fee—his biggest exploit up to that time. A neglected telephone memorandum had been the "raveling."

"Near-Geniuses" Are Seldom Winners

THE men who have gone ahead with us," says Mr. Insull, "have not done it because of any extraordinary natural ability. The near-geniuses among us have not, as a rule, done so well. Near-geniuses have a way of getting tangled up in the special limitations which brilliant people so often seem to have.

"The men I know who have gone ahead fastest have been just normal fellows. They were set off from the others, in the beginning, only by the fact that they made a practice of using the constructive little opportunities which others have neglected. And that practice gave them the special abilities they needed.

"One of our vice presidents came with us as an inspector of underground work, another as a book-keeper, another as an office boy. Our secretary and treasurer began with us as an office boy. And so on down the line.

"None of them were rich or had influential friends to back them. Some had not as much as a high-school education; but they all had the characteristic I have mentioned—a sort of eagerness to be serviceable in unexpected ways. It was this, more than all other factors put together, that has put them where they are today."

It was a call from a man who had failed to pay him for some previous service, and who now, it appeared, was in jail again! It looked like just another chance to do something for nothing, and he had passed it up. But it let him into a good piece of business, and he has been going right ahead ever since.

Most of the men I have known who have stood still or have fallen down have been a good deal like this young lawyer. They thought they lacked ability or opportunity, when the real trouble was simply that they did not recognize the form that opportunity was taking for them.

Opportunity has been present to practically all of them—to *all*, I think, who have had passable health. It has been there in the form of something a little beyond the absolute requirements of their job; something for which they thought they "did not have time," or which did not seem to be "their business," or which they did not feel competent to do. They failed to study up on some phase of their work; or they neglected to do anything about some good idea that occurred to them. A few things like that—and they were static. They were not making any headway.

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Everyone has been told that the way to get on is to do more than is expected of him. But not everyone realizes just how the method works. The qualities which most often hold up the progress of men in business are lack of knowledge, lack of self-confidence, and that idle habit of thought which does not lead to action.

The effort to do the little unnecessary, useful thing, just beyond one's absolute duties is a direct attack on all three of those failings. It develops knowledge, right where knowledge is needed most, by the incomparable method of experience. It develops self-confidence in the same way. And it is itself the very process of getting action as a result of thought. The most elaborate curriculum for developing business ability couldn't serve the purpose better.

The advantage of the method in my own case began to be illustrated soon after I took my first grown-up job. I had answered a "blind" advertisement, and, as a result, had secured a place as secretary to Mr. Edison's business representative in London. I had gone into the business without any knowledge of either the technical or the commercial side of it.

What prepared me rather quickly for a better place, and attracted the attention and support necessary to get it, were two pieces of work *outside* of my regular duties.

The first chance came only a few weeks after I had taken the job, when my chief sailed for the United States and left me behind. There was not much to be done in the office and I might have had most of my time free. In fact, it was expected that I would. But thanks to an immense curiosity about the business, I didn't; I stayed in the office and read, and reread, every document I could lay my hands on.

When the chief came back, I was able to supply him with information on current affairs and even on things which had occurred before I came with the business. And I could relieve him of more work than he had expected I could. It had all come about in the simplest possible way, that would have been open to anyone; yet it made a considerable impression on him.

The second outside task—of course, there were other smaller ones in between

—came a year or so later. Mr. Edison's technical representative in London was getting out a report on electrical developments in England and on the Continent. He wanted a stenographer to work with him evenings, for perhaps two months, and he asked me if I couldn't find one for him.

By this time I had become fairly well informed on the commercial side of the business, but on the technical side I was still pretty ignorant. It struck me that here was my opportunity to brush up on that side, and I volunteered for the job.

It was hard work. It kept me busy often until midnight, on top of unusually active days, as it turned out. But it brought quick results.

This is the way they developed: The technical man went to New York with his finished report. While he was away he wanted someone in the London office to keep posted on certain European properties in which he was interested, and to send him weekly reports. I was chosen to do it. I was chosen simply because of the familiarity with the properties, and with the requirements of this technical man, which I had gained from my evening sessions with him as a stenographer.

In the ordinary course, the weekly reports were shown by the technical man to Mr. Edison. There was nothing elaborate or difficult about them. They were simple compilations of certain data, which my work with the technical man had made it easy for me to prepare. But they showed a familiarity with the properties, and with other details of the business, that Mr. Edison liked. It happened that he himself was needing a secretary at the time. He asked the technical man about me, and then sent for me.

You see how directly one of the unnecessary tasks brought the opportunity; how the two of them together had prepared me for it; and how impossible the opportunity would have been but for my undertaking those tasks, no matter what sort of natural ability I might have had. As a matter of fact, the real opportunity was not the call from Mr. Edison, but the chance at those bits of outside study and work. And there are similar opportunities opening up from every job.

I found them again when I became Mr. Edison's secretary, although it was not so easy to take advantage of them. The actual requirements of the work were stiffer. The night I landed in New York

—I got there about six in the evening—I called on Mr. Edison immediately, and worked straight through with him until four in the morning.

That was unusual; but even under ordinary conditions there was a good deal of overtime work. Mr. Edison was as likely to be in his laboratory at midnight as at midday. Often the most convenient time for him to attend to his business affairs was after he had finished in the laboratory. It was not uncommon for me to spend the day in the office in New York and then go down to his home at Menlo Park, in New Jersey, for a session with him at almost any hour of the night.

In spite of these long hours on many days, there were still opportunities to learn more about the business than I was actually required to know. Mr. Edison helped to make these opportunities, as any good executive would. He used to stay after his own work was finished and explain things to me.

Gradually I was able to relieve him more and more of business matters. At first, I only handled his correspondence, with his help. Then I handled it mostly without his help, and certain other business matters as well. Finally, I was put in full charge of all his business interests.

So much for my own experience. The experience of all the principal executives in our organization has been fundamentally the same.

You asked me how we have selected and trained these executives. In a way, they have selected and trained themselves, by this method. By the time there was a vacancy somewhere higher up, we had unconsciously absorbed the fact that a certain man had the ability to fill it.

Take a typical example, that of a secretary I had some years ago. He began by doing quite a surprising lot of things more satisfactorily than I expected. He catered to my peculiarities, you might say. For example, I get down to the office pretty early, often before eight o'clock. But I never managed to arrive before this secretary. He did not, by chance, come in after me some morning, and thus find out that I liked to get down early. In some way he found out *before* that happened, and kept it *from* happening.

He did a number of things like that—little things most of them, at first. But a manager naturally generalizes from small things. My thought was that a man

who handled a small matter with such care would hardly slight a larger one.

The secretary kept on confirming and elaborating that first impression. Soon after he came with me, we made a trip to London together. I had a long list of people to see there, and I was doubtful about getting through with them all with any comfort, because for the first time but one in years I was going without a secretary who knew them all well, knew where they were to be found, and what my relations with them were. The one previous time, in recent years, that I had gone without an experienced secretary had been full of exasperation.

But this new secretary was different. He didn't apparently have to spend any time at all in getting onto the ropes after we reached London. He seemed to know them already. He hadn't been there before; but in some way—by going through old correspondence back in Chicago and by talking with men who had traveled with me before, I suppose—he had prepared himself, so that the trip went through about as smoothly as if my old secretary had been along. And all this without more than the barest suggestion from me.

Well, you simply can't keep from promoting a man like that! It hasn't been many years since that secretary started with us, but he is now one of our principal executive officers.

One of the great advantages of this constant effort to be more serviceable is the alertness it usually gives a man to suggestions for improving his work, even if the suggestions are only implied. The fact is that the best suggestions in the air in any office are likely to be apparent only to people who are peculiarly sensitive to them—who are on the lookout for them.

Some years ago we had a new clerk who was starting off by allowing things to accumulate on his desk.

That is, of course, a bad habit to start. Everything ought to be disposed of every day, even if the disposition is only a definite decision to lay it aside for future consideration. The things a man leaves on his desk overnight are usually things he just hasn't been decisive about. And if a man, when he is just beginning, and hasn't much to do, habitually fails to dispose of the matters before him, you are likely to think he will follow the same course in a higher position, where

more and larger matters will come to him.

This young man was somewhat influenced, I imagine, by the bad example of an otherwise excellent older employee in the same room, who left things on his desk.

One way to handle the situation would have been to call both men in and tell them plainly where they were wrong, and why. I have done it that way sometimes; but there are other ways that often are more satisfactory, and on this occasion I used one of them. I called in the older man and asked him to speak to the new man about leaving things on his desk. And I suggested that it would probably be better if he did it as if on his own initiative, without mentioning me.

The next morning *both* men's desks were clear. Neither knew that I criticized him. The older only knew that I had criticized the younger; and the younger did not know that I had spoken at all. But both were quick to get the point; and it showed something about them that I liked to see.

There is a great deal to be said for the explicit methods of training executives which more and more managers are using today. Doubtless it does help if they state point-blank—one, two, three—just what constitutes executive ability and how the various points may be developed.

The trouble, from the employee's standpoint, is that such methods are not yet in general use. Many managers still find that they can get all the executives they need without going to so much bother about it. Moreover, there is a conviction among them that, whereas there may be a good deal of executive ability in the organization that could be dug up, the best of it rises to the top by some buoyancy of its own. I do not justify this view; I simply state that it exists and that it satisfies the requirements of large numbers of managers. So long as that is the case, the man who waits for explicit instructions, and does not meantime sharpen his senses for useful hints, stands a good chance of remaining where he is.

The effort to do more and better work than was expected, therefore, has been, in my experience and in the experience of the men who have grown up with me, the biggest factor in promotions.

But there have been two other important factors: One is patience—especially in the matter of salary increases. Sometimes, of course, a man should ask an increase—firmly. No one has a right, to say nothing of his desires, to deprive himself of the sort of encouragement to good work that comes through the pay envelope.

But until he is sure he has a watertight case, he had better give the manager the benefit of the doubt. He'd better tighten up his case, not present it just yet. For a *premature* demand for an increase means a great deal more to the manager than may appear. It means that the employee is thinking more of his own interest than of the company's; and that is deadly. The precise thing you want to know, before you push a man ahead, is that he will put the company's interest first. Then you can feel tolerably sure that if he reaches a point where the company cannot easily get on without him, he will not try to hold it up.

Half the battle is choosing the right place to work, getting at least near to the sort of thing we want to do. But a great many men seem to forget that even after they have found a good place to work, they are still not going to be entirely satisfied with everything connected with it. That is what all the men who have gone ahead have seemed able to remember. They have kept a sense of proportion about really minor things which didn't please them—especially

those things they weren't in a position to correct—and have gone serenely on with the main business. Sometimes, by that policy they have gotten themselves into a position to correct some of the things they hadn't liked—to our advantage as well as their own. Or they may have gotten the chance to revise their own misapprehension about them.

This kind of loyalty is a prime essential if the qualities I have been talking about are to have a fair chance to do their work.

I don't want to imply that *everyone* has it in him to do executive work. That probably is not so—although I suspect it is more nearly so than is commonly supposed. Good business management is, after all, just another phase of good personal management. A man who can handle his own affairs well can usually direct others.

But I would not generalize too far. Certainly there are men who are happier without executive responsibility, and who seem to have been cut out for private soldiers. My point is simply that a good many men who have it in them to be executives, or to become bigger executives, keep themselves out of those classes by wrong methods which might rather easily be set right; that the men I have seen go ahead have done it by means that would have been perfectly practical for others whom I have seen stand still.



“Pacific Service” in the Pages of History; The Passing of Mission San Jose Sub-Station

By GEO. L. DONOVAN, Agent, Niles

In a “History of Washington Township,” published in 1904, appears this item: “In October, 1901, the Standard Electric Company brought its line into Mission San Jose from the Blue Lakes, Alpine County. This is to date the longest line in the world, carrying the biggest voltage in the world, 40,000 volts.”

On September 2, 1920, the last entry in the log at the Mission Sub-station is:

“Station cut out—The End of Mission, Farewell—H. W. Weber.”

This entry marks the closing of the sub-station Mission San Jose and the abandonment thereof by the Pacific Gas and Electric Company. The story reads like fiction. This period of 20 years saw the development of the transmission of high-tension electric current from 40,000 volts to 150,000 volts.

The Mission sub-station was the heart of the power distribution for many years, but with the mighty changes in high-tension transmission its usefulness is now past. In its history are recorded names

of men who are classed as pioneers in sub-station operation. True, it was crude in its various stages, still the changes came rapidly. We note the names of the foremen in charge who served during its life: Friday, Hansen, Whitfield, Stewart, Leigh, Starmer, Brown, Gilman, Colby, Elliott and W. H. Weber, the last of them all.

The spot where the old building stands has seen much of the romance of early California history. It is located in the north approach of the fertile valley where the Mission fathers in 1797 built the most easterly of the northern missions and called it Mission San Jose and the sub-station, appropriately, was so named. The Mission grew and flourished as the center of religion and farm development. The sub-station marks the famous Stockton pass which begins right at this point. In '49 the gold rush passed here. Gold seekers from all over the world came from San Francisco around by the way



The time-honored old sub-station at Mission San Jose, now passed into obsolescence.

of Mission San Jose, where they outfitted and then proceeded out through the pass and on to the mines.

Many miners camped over night where the station stands, so as to get over the pass during the daylight. At night it was dangerous traveling through the pass, as many robberies and hold-ups occurred there in its winding course.

John C. Fremont passed this spot several times, also Bret Harte, Mark Twain, Bayard Taylor, and many others famous in California history.

This was a spot frequented by Murietta, the bandit, and other bad men of those wild days. Murietta had a lookout here who watched for any signs of pursuit from Mission San Jose and Alvarado. He had a close call at this very place when he had a horse shot under him. He made his escape in the steep gorges of the creek that wind through the mountains. Many a lonely little caravan was set upon and robbed of its humble possessions and hard-earned gold. Many a struggle of resistance was put up. Hard were some of the fights, and success met some through pluck, or arrival of assistance.

The first public school in Washington township was built just across from where the station now stands. It later became the property of A. Pinheiro, who added to it, and raised his large family of 20: four sons and 16 daughters. Here were scenes of merriment and famous hospitality. Here in the warmth of the balmy summer evenings assembled the young men and young women decked in the brilliant colors of those Spanish days. Horses pranced in their restlessness to the champ of the bit and clinking of bridle chains. Men wore the high hats and suits gaudy with silver and gold trimmings and spangles. The young women were dressed in all the gay colored reds of those days. Songs and laughter floated in the soft air 'midst the music of the guitar and the click of the castanette.

With the passing of the Mission substation also disappeared the Oakland 60 K. V. line. This line ran through the heart of Washington and Eden townships and was a source of constant trouble. During the labor troubles of 1913 it was brought down many times, and in stormy

seasons it was sure to come down. It was often necessary to replace the insulators on this line between Niles and Hayward, and sometimes as many as a hundred of these insulators had to be changed, broken by tramps and boys walking the railroad. On one occasion a farmer was plowing in the railroad right of way west of Niles. He had to frequently pass under the 60 K. V. line which in some places was not over 15 feet above the ground. In one of these places, for some reason never explained, two of the wires parted and fell on his team, killing them instantly. The farmer was not hurt, yet for hours he was so stupefied with panic and astonishment at what he saw that he could give no account of the accident. His little boy of 10 years of age, who was a witness to the trouble, said, "The fire came out of the wires like water out of a hose."

For many years the high-tension lines were disconnected in the sub-station. On some occasions, during the trouble, it was a tremendous job. One operator with a long, smooth pole with a hook on the end grabbed hold of the 60 K. V., disconnected and yanked it open while another operator broke the arc by shoving an asbestos pad between the points.

One after the other the three lines were opened in this way, and at times the noise and confusion were awful. The old patriarch across from the sub-station thought the men in the station were having a row. There was one particular piece of trouble that simply "raised Cain" when they tried to open the switches in the station. The arcing switches roared and screamed while the operators yelled and cursed as they fought to control them. A. Pinheiro, listening to the infernal racket, could stand it no longer, so he hot-footed it to Mission San Jose and called up the constables, telling them that the men in the electric plant were murdering and killing one another. A half-hour later, when the officers arrived, the trouble was over and the station quiet and orderly as ever.

The substation now stands silent. Its part in the great distribution scheme is finished. It goes honorably into the past history of the Pacific Gas and Electric Company.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION



There's something inspiring about an al fresco feast.

The annual outing of de Sabla section, held this year at Camp 1, de Sabla, on May 28th and 29th, proved to be one of the most enjoyable ever held under the auspices of the P. S. E. A., not only on account of the beautiful scenery and the hospitable entertainment enjoyed, but, also, the novelty of sleeping out under the stars.

It is estimated that between 400 and 500 members took advantage of the opportunity offered for a trip to what is generally accepted as one of the beauty spots of our "Pacific Service" territory. As all know who have been in the Butte County hill region, the surroundings of de Sabla forebay and de Sabla and Centerville power houses are of great beauty including, as they do, deep ravines and stately forests of pine and cedar. It is, therefore, small wonder that the annual excursion to this region is looked forward to with pleasant anticipation.

The festivities began early on Saturday evening, May 28th, with music by our "Pacific Service" orchestra to which dancing was enjoyed on an open-air platform under the pines. The night was clear and calm, just such a night for merrymaking. Towards midnight an intermission was taken in order to witness a display of fireworks on the banks of the forebay reservoir, the beautiful effect of which was beyond description. Following this display a midnight supper was served consisting of hot rolls, coffee and weiners. Then came the

time to enjoy the luxury of sleeping under the stars. To quote from one who was present:

"About two A. M. we decided it was about time to retire. Owing to the unusually large attendance the accommodations had all been pre-empted, so that our ingenuity, as late-comers, in locating a suitable resting place was taxed to the limit. However, the problem was satisfactorily solved by rolling a bale of hay from the barn a short

distance away to a large pine tree in the corral, and through the kindness of Mrs. I. B. Adams, who supplied us with a number of quilts and comforters, we managed to pass a very comfortable night."

From another one present: "Arrangements had been made to protect the sleepers from the wild animals that abound in this section, but the music furnished by some of our soundest sleepers made these precautions unnecessary."

Next morning all enjoyed a substantial breakfast in the open and were ready for the big day. Many of the visitors took the opportunity to visit Centerville power house by way of ditch and flume, and some, who were accustomed to real hiking, returned by way of the steep trail. At 11 o'clock in the morning the dedication ceremony of the new vacation camp site, located under the trees beside the forebay, took place. Section chairman T. J. Dunn introduced Mr.



The boys slept out in the open air.

I. B. Adams, manager of de Sabla division, who explained the general purpose of the camp. He informed his audience that for the present six tents on platforms were at the disposal of members of the Association and that electric lights and water, besides other necessities



Civilized men cannot do without cooks.

were furnished free of charge. He urged all who desired to take advantage of this camp site to make their reservations early. He also pointed out that any future extensions to this camp would depend on its popularity. At the conclusion of his remarks Mr. A. U. Brandt, chairman of the P. S. E. A., was introduced and in a few words dwelt on the wonderful opportunities this camp site offered to our members. The ceremony was closed by raising the American flag and the P. S. E. A. banner and all present joined in singing the "Star Spangled Banner," led by Mrs. I. B. Adams.

The next big event was the barbecue, cafeteria style, which took place about 1 P. M. The keen mountain air had served as an excellent appetizer so it is needless to relate that everyone thoroughly enjoyed the repast. Even a hail storm which lasted about twenty minutes, failed to upset things; indeed, it has been related that the feasters were in such good humor that

they were not only not driven to shelter but actually enjoyed the storm as a novel experience.

Along in the afternoon many of the visitors started for home, while others remained until Monday morning, making a leisurely return during the Memorial Day holiday with stopovers. One and all were enthusiastic about their trip, and were very loud in their praises of the hospitality of their hosts. De Sabla section has indeed scored another success to be added to our many delightful outings.

On the evening of May 27th San Francisco section held its annual minstrel show before a large and enthusiastic audience at Native Sons' Hall. The entire performance was better than amateur, and San Francisco section is to be congratulated in possessing such excellent talent.

The program opened with a very cleverly conceived sketch written by Mr. F. Talcott, Chairman of the Educational Committee, entitled, "The Rose of Rosa's." It was a skit with a moral, tending to call to the attention of those driving automobiles the necessity for care and observance of traffic rules in order to avoid accidents and unnecessary arrests. Its message was very ably passed over to the audience by the following cast: Judge P. G. Ande, J. E. Murphy; Clerk U. S. All, J. J. Cunningham; Officer B. Careful, Ed. Wood; Traffic Offenders: I. Tuka Chance, J. Berkhead; A. Speeder, H. Hardage; B. Careless, J. Stephson; C. Nothing, J. O'Donnell; First Offense, F. P. Deuckel; Tony Borraco, Prisoner, Fred Pelle; Bailiff, I Bring 'em In, Otto Schultz. Each character was admirably sustained but special mention might be made of the bailiff, who supplied the comedy, and of the prisoner who furnished the pathos.

The second part of the program was devoted to music. This was opened by a violin selection by Miss Agnes McGuire, accompanied by Miss Veronica Shane. The next number proved to be a very clever act called, "Direct from the Island of Yap," by Larry Miller, who was accompanied at the piano by Johnnie Hampel. Misses Mae Cox and Edna Sarraile entertained with songs and were followed by a piano recital by Miss Gladys M. Bostwick, daughter of division manager Bostwick. The young lady displayed exceptional ability. Through the courtesy of Byron Mauzy, Miss Nona



Dedicating the vacation camp site.

Campbell rendered two songs accompanied by the Chickering Ampico reproducing piano, operated for the first song by L. F. Galliani, while for the second song "Pacific Service" energy was the motive agent, this being done to demonstrate the piano under electrical control.

During an intermission Mr. Boswick made a short address, in the course of which he called the attention of the audience to the ball about to be given for the benefit of the convalescent and crippled soldiers, and offered free tickets to each of the first fifty who purchased one ticket at \$1.00 each, the company having bought fifty. Something over 150 tickets were disposed of in this way.

Now the minstrel show proper began. It was called the "Dark Town Follies," and was under the able directorship of G. S. Tracy, chairman of the program committee. Mr. J. A. Johnson, chairman of San Francisco section, acted as interlocutor and proved to be a very excellent one.

In the circle the following were exceptionally good: tambos: Miss H. Engleman, Messrs. H. A. Spencer, D. Gustafson and J. Gilbert; bones: Miss L. Hummel, Messrs. D. M. Nicholas, Wm. Conway, H. Eckenroth.

The following represented cupids: Misses Isabelle Znrchner, Loretta Hanley, Myrtle Allard, Helen Bryne, Myrta Zavita and Lucille Wrede.

Miss Zita O'Connor sang, "I Hear You Calling Me," and, as an encore, "Alice Blue Gown."

Daniel Gustafson of the Gas Sales Bureau proved the old saying, "Still waters run deep," and it is doubtful if anyone around the Gas Sales Bureau knew that Dan could sing "Ain't We Got Fun," and put it over as he did.

Dick Hunt always pleases and he sang very beautifully the song, "When Honey Sings An Old Time Song."

Fred Pelle, the star of "The Rose of Rosa's," sang "Rose Marie," and proved himself to be not only an actor but a singer.

Sam Knapp sang "Wang-Wang Blues" with great success.

Miss Alice Talcott, daughter of Mr. Frank Talcott, made a successful debut as a singer. She delighted her audience with several songs.

Miss H. Engleman and Miss L. Hummel of the bookkeeping department established a reputation for themselves

as character actresses. Their songs were well sung and well acted.

Mr. John Gilbert sang "Maybe," in his usual good style and then for the closing number Wm. Conway sang "Cupids in the Briney."

Mention should be made, also, of the chorus which did good work and was prominent throughout the show with the manager of San Francisco division right in the middle of it.

All in all it was an entertainment which was thoroughly enjoyed by everyone present and great credit is due to those who made it the success that it was.

That Colgate section can deliver one hundred percent when it comes to entertainment is the consensus of opinion among some two hundred company employees, their families and friends, to say nothing of a goodly number of outsiders, who attended the gathering at Lake Francis, above Colgate power house, Saturday, June 11th, and following day.

A business meeting which opened the proceedings on the Saturday night was cut short and soon after nine o'clock an orchestra struck up the first dance. A wide platform was built on a peninsula in Lake Francis, and the wooded hill-sides formed a delightful background for the merrymaking. The moon shone brightly but a giant searchlight dispelled such shadows as might have proved alluring to young couples affected with the old malady of "moonlight-on-the-lake."

Never was such a dance. The fun continued unabated until three in the morning, when the musicians wilted from sheer exhaustion. Those who fell by the wayside earlier in the evening were revived by generous doses of "hot dogs" and buns served piping hot by the refreshment committee at midnight.

A few were able to sleep after the dance closed, but all were awake soon after six A. M. for a delicious camp breakfast. For the remainder of Sunday fishing and swimming provided great sport. Two baseball games attracted large crowds. The first, played in the morning, between the Marysville office force and the "heavy gang" was won by the latter. In the afternoon Colgate power house defeated the Marysville "heavies" and claimed the pennant. Both games were fast and exciting.

The crowning event of Sunday was the barbecue cooked under the direction of Chairman George Johnson. No barbecue

was ever quite so delicious if the verdict of the picnic multitude is to be given credence. It is safe to say that the Colgate picnic will be an annual event from now on.

A small admission fee was charged to aid in meeting expenses and badges denoting payment bore this inscription:

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Can you figure it out?

There is a vast difference between being a "boaster" and a "booster," and there is a group of energetic Colgate section members who declare they are the latter and then go on to relate how well they play baseball.

When the truth is finally told, however, they really are not boasting of anything they do not actually do. Their work on the diamond has proved the envy of amateur nines in the vicinity of Marysville and the boys have a series of victories to their credit of which they may well feel proud.

Every night they may be seen working out in Municipal Park, Marysville. The following compose the team: W. Langdon, F. Mack, C. Becker, V. VonHemm, F. Sheldon, M. Bremer, H. Payne, R. Allread and E. Holdridge. All are employees of Marysville district and members of the office force.

The town of Crockett was turned over to the employees of the Pacific Gas & Electric Company on the afternoon and evening of May 14th, 1921. The occasion was the gathering of the East Bay section members for their regular monthly meeting.

The Contra Costa employees acted as hosts at this meeting. The Community Center, with its gym and swimming pool, the women's club, the parks and playgrounds were all turned over to the employees for the day. A large number were shown through the C. & H. Sugar Refinery by courtesy of the management. Numbers visited South Tower where open house was kept. There were games in Recreation Park.

In the evening all gathered at Community Center Auditorium where the Crockett boosters served dinner in

booster style. It was quite a novelty and a lot of good eats were enjoyed. Following the dinner there was a pleasing program of entertainment. A dance followed the end of a perfect day and evening. All were pleased and proclaimed it one of the most enjoyable meetings of the year.

May 23rd was "Educational Monday" for East Bay division, and we were again able to have as exponent of things electrical Mr. Bridges of the Westinghouse Company.

His subjects, verified with practical demonstrations, were about those very mysterious instruments known as reverse and overload relays. We were told the history of electrical development and the discovery and manufacture of these instruments. They are automatic in operation and, after all trouble is past, reverse themselves to their former position as guards on special duty.

No doubt exists as to their necessity, for they are the real sentinels that guard a company's power lines in times of trouble. There is no sleeping at the switch, no effects from long hours of duty, and, being set to the twentieth part of a second, their action is almost as quick as thought itself. For the purpose of setting them, a new timing device, called the cycle counter is used; this is so exact and rapid that the well known stopwatch seems very slow in comparison.

It was noticed that quite a number in attendance were not of the electrical field, but no doubt they acquired some very useful knowledge, as Mr. Bridges is certainly master of his subject.

Most of us are familiar with the method followed in the West of falling the great pine trees and hauling the huge logs to the mills and sawing them into lumber, but not many of us who attended the Educational meeting given by the East Bay section, at Ebell Hall, Oakland, May 6th, were familiar with the way they do it in the East.

A five reel picture, entitled "The History of a Pole," was shown us by Mr. Johnson of the National Pole Company. This concern cuts the cedar trees from which the poles are made in thirteen states and ship the poles to all parts of the world. In the East the cedars are cut in the winter time in order to take advantage of the fine transportation the snow affords in hauling to the shipping

points. As many as ten large sleds piled high with poles are pulled by a single tractor engine over the icy roads at the rate of six miles per hour with ease.

The cedars of the East from which the poles are made are of very crooked variety, while those of the West are very straight. The poles are cut, the bark peeled off, graded according to size and their butts treated with creosote, as a preservative, before they are sold for use.

Mr. E. G. McCann, who is quite an expert on the victrola, entertained us between pictures. After the pictures the floor was cleared of chairs and everybody danced.

The Sonora members of the P. S. E. A. were again hosts to the San Joaquin division section on Sunday, June 12th, when they staged a monster picnic at which between 400 to 500 employees and their friends were present, on the shores of Phoenix Lake, four miles above Sonora.

The party left Sonora at 10:30 A. M., parading in machines with a large brass band leading. The morning was passed in boating and getting acquainted, and at noon a bounteous picnic was served at tables spread under the trees. There was more than enough to satisfy all, including forty gallons of ice cream.

After luncheon games were played, appropriate prizes being awarded, and at 3:30 dancing was begun on an open-air pavilion erected especially for the occasion. At 6:30 the orchestra played "Aloha" and the crowd began to disperse, each and all declaring that the picnic had been a huge success and expressing whole hearted appreciation of the unflagging efforts of Mr. Momsen and his loyal band at promoting sociability in the division.

Approximately one hundred of San Jose section's finest exercised the third prerogative of all American citizens, the pursuit of happiness, at Masonic Hall, San Jose, Saturday evening, May 21st.

Chairman L. E. Wolbert opened with a brief business session, after which the meeting was turned over to the chairman of the entertainment committee, Mr. R. W. Rigby.

The first item was an illustrated lecture on gas generation by Mr. J. M. Dickey, Gas Engineer from San Francisco division. This was followed by

games and dancing. A most interesting number was a whistling solo by Mrs. Charles Stadille, a really remarkable performance. For those who cared, cards were provided.

Excellent music was provided by an orchestra under the direction, at the piano, of Mr. Hayes Keesling, a brother of our old and well remembered friend from Oakland, Homer of the same name. The entertainment and refreshments were in charge of a volunteer committee of ladies. The success of the evening was largely due to their hearty and efficient cooperation.

The annual picnic of North Bay section was held on May 15th, in the beautiful redwood grove at Mirabel Park, on the Russian river, and was attended by over three hundred picnickers, composed of members of P. S. E. A., and their families and invited guests. The weather was made to order and all present gave themselves up to the usual picnic festivities. Swimming in the Russian river proved a big attraction for many who brought their swimming suits, while others explored the surrounding country. There was an al fresco feast and in the afternoon there was dancing and visiting and all the things that go to make up a picnic.

Among those present were Division Manager H. G. Ridgway, of San Rafael, Chairman A. U. Brandt of the P. S. E. A., F. R. George and C. E. Young.

The Pacific Service baseball team of the San Francisco section leads the Sunday games division of the "Industrial League" with a 1000 percentage, winning every game up to and including a ten inning game on Sunday, June 19th, with a 4 to 3 score.

This record is regarded as proof that Harry Hardage of the Gas Distribution Department has built up a fighting two-fisted team to represent "Pacific Service" in the great national game.

After two more games the winning team of each of the several divisions of the "Industrial League" play for the "Gonfalon." San Francisco hopes that Harry's aggregation will bring it home.

At a recent meeting of the Executive Committee of the Association it was decided to appoint a Director of Education, who will have charge of all intensive education work in the various division sections.

The Financial Side of "Pacific Service"

Following is approximate condensed Income Account Statement for the five months ended May 31st, 1921, compared with the same period of the preceding year:

FIVE MONTHS ENDED MAY 31ST

	1921	1920	Increase
Gross Earnings, including Miscellaneous Income.....	\$16,140,732.61	\$13,620,744.94	\$2,519,987.67
Maintenance	1,407,701.50	985,702.31	421,999.19
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties, and Uncollectible Accounts....	8,724,357.95	7,752,649.17	971,708.78
Total Expenses.....	\$10,132,059.45	\$ 8,738,351.48	\$1,393,707.97
Net Income.....	6,008,673.16	4,882,393.46	1,126,279.70
Bond and Other Interest....	2,368,029.39	1,940,585.61	427,443.78
Balance	\$ 3,640,643.77	\$ 2,941,807.85	\$ 698,835.92
Bond Discount and Expense..	159,345.60	97,018.60	62,327.00
Balance	\$ 3,481,298.17	\$ 2,844,789.25	\$ 636,508.92
Reserve for Depreciation....	1,416,666.67	1,159,066.42	257,600.25
Surplus	\$ 2,064,631.50	\$ 1,685,722.83	\$ 378,908.67
Dividends Accrued on Preferred Stock.....	879,751.28	739,928.53	139,822.75
Balance	\$ 1,184,880.22	\$ 945,794.30	\$ 239,085.92
Dividends Accrued on Common Stock.....	708,417.90	708,417.90	.....
Balance	\$ 476,462.32	\$ 237,376.40	\$ 239,085.92

The substantially larger gross and net earnings shown in the foregoing statement are, in a large measure, resultant from the Company's increased investments in additional generation and distribution facilities. Dating from the beginning of the comparative period, namely January 1st, 1920, the Company's new capital outlays have aggregated more than sixteen million dollars. A part of this new capital is not yet in the productive stage, but it may be definitely stated that two of the hydro-electric plants on the Company's Pit River developments will be completed within the next thirty days, and it is anticipated that the economies resulting from these plants, the better water supply this year, and the recent reduction in the price of oil will compensate for the cut from 15% to 6% made in surcharges to electric rates by the Railroad Commission in its decision which became effective April 10th, 1921.

In the five months' period covered by the above earnings statement, there was some falling off in the Company's industrial load, but this has been almost entirely offset by increases in household uses and other smaller units of consumption. Gas sales continue to show satisfactory increases.

At the close of May, 1921, the Company was serving 578,397 customers, an increase since January 1st of 9,038, and in the twelve months to May 31st of 36,311.

TWELVE MONTHS ENDED MAY 31ST, 1921

	1921	1920	Increase
Gross Earnings, including Miscellaneous Income.....	\$37,905,821.28	\$29,479,401.58	\$8,426,419.70
Maintenance	3,162,209.39	2,091,223.27	1,070,986.12
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties, and Uncollectible Accounts....	21,682,098.25	16,739,183.74	4,942,914.51
Total Expense.....	\$24,844,307.64	\$18,830,407.01	\$6,013,900.63
Net Income.....	13,061,513.64	10,648,994.57	2,412,519.07
Bond and Other Interest....	5,347,879.49	4,471,904.23	875,975.26
Balance	\$ 7,713,634.15	\$ 6,177,090.34	\$1,536,543.81
Bond Discount and Expense..	368,864.64	218,334.23	150,530.41
Balance	\$ 7,344,769.51	\$ 5,958,756.11	\$1,386,013.40
Reserve for Depreciation....	3,045,902.26	2,617,399.75	4,942,914.51
Surplus	\$ 4,298,867.25	\$ 3,341,356.36	\$ 957,510.89
Dividends Accrued on Preferred Stock.....	1,917,755.78	1,646,017.89	271,737.89
Balance	\$ 2,381,111.47	\$ 1,695,338.47	\$ 685,773.00

Comments on Company's Pamphlet Report for the Year 1920

In the volume of its business, the Pacific Gas and Electric Company, with \$34,475,372 of gross operating revenues during 1920, now ranks as the second largest gas and electric company in the United States, being exceeded only by the Commonwealth Edison Company of Chicago with gross earnings in 1920, of \$35,317,134. The gross earnings of the Pacific Company exceeded those of the New York Edison Company, supplying the metropolitan area of New York City, by \$668,000.

The Company's financial showing is of especial interest to California investors, as approximately \$105,000,000 of its stocks and bonds are held in this State by more than 30,000 private investors, savings banks and other fiduciary institutions. The Company's statement that the amount available for the payment of fixed charges was \$11,935,235, or 2.4 times all interest charges, and that after the payment of the regular 6% dividends upon its First Preferred Stock, aggregating \$1,777,933, there remained a balance of \$2,142,026, will, undoubtedly, be received with satisfaction by those investors at a time when many railways and industrial enterprises of national scope and importance, which do not possess the inherently stable earning power of gas and electric utilities under depressing business conditions, are now reducing or passing dividends altogether. The Company's 5% Common Stock dividend was also earned by a margin of \$441,180.

As the Company's earnings under the existing system of public regulation are based upon only a fair rate of return on the value of its properties, and without any regard whatever for the amount of stocks and bonds outstanding,

the Company's statement that its plants and properties account at the close of the year stood at \$164,655,623, should also be extremely reassuring to its security-holders. Of this amount, \$91,875,790, or 56%, represents new construction and the acquisition of properties in the last 15 years, as shown in detail in the report.

The Company's contribution to the upbuilding of the material resources of the State and the development of its agricultural, mining, manufacturing and other basic industries is indicated by the fact that it has either completed, or will bring to completion at an early date, 138,741 H. P. of additional hydro-electric installations, in addition to 16,756 H. P. of additional electric energy in its steam stations, a total of 155,497 H. P. Even before undertaking these new developments, the Company was one of the largest owners and operators of hydro-electric plants in the United States, and the significance of these figures may be grasped by the fact that they actually represent an additional generating capacity equivalent to more than 50% of its former water power capacity, and more than one-third of its former capacity if steam stations be included. In this and other new construction, \$11,314,609 was expended during the year.

Comparing costs prevailing in 1920, against pre-war costs, fuel oil is shown to have gone up 152%, labor 56%, taxes 163% and materials 40%. Contrasted with this, the average revenue derived from a kilowatt-hour of electricity increased but 15.9%, and from a thousand feet of gas, 15.2%. The opinion is expressed that a beneficial re-adjustment of some of these costs may be anticipated, and that when the new hydro-electric plants on the Pit and Stanislaus Rivers, now under construction, are placed in actual operation, substantial economies should result. The Company's customers are already receiving the benefit in reduced surcharges of some of the economies anticipated in this report.

In pursuance of its policy of maintaining its properties in first-class physical condition—a prerequisite of the high standard of service expected of California utilities—there was expended for maintenance during the year \$2,740,210, in addition to \$1,788,302 set aside as a reserve for depreciation. Upkeep expenditures during the past fifteen years have averaged more than \$3,000,000 per annum.

Conservatism in the management of the financial affairs of the corporation is indicated by the fact that in the last fifteen years, less than one-third of the net earnings was paid out in cash dividends, no less than \$40,726,000 of net earnings having been used to retire bonds, reinvested in the property, or expended for replacement and rehabilitation.

Net working assets of \$12,053,084 are reported, including cash and United States Treasury Certificates of Indebtedness of \$3,078,402. This is a betterment of \$1,050,702 in the Company's cash position as compared with the close of the preceding year.

FIRST PREFERRED STOCK

With this issue of "Pacific Service" Magazine we are enclosing copy of a recent announcement respecting the Company's First Preferred 6% Stock. In the first six days after its initial appearance 160 orders aggregating more than \$270,000 were received. The management will appreciate it if stockholders and employees receiving this announcement will pass it on to some one who may be interested in the facts therein presented. To any one with funds to invest these facts should prove convincing.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF
THE PACIFIC GAS AND ELECTRIC COMPANY

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*The Pacific Gas and Electric Company desires
to serve its patrons in the best possible manner.
Any consumer not satisfied with his service
will confer a favor upon the management by
taking the matter up with the district office.*

VOL. XIII JUNE, 1921 No. 1

EDITORIAL

Our company's pamphlet report for the year 1920, recently issued from the press, contains matter well worthy of public attention. It appears from this report that in the volume of its business "Pacific Service," with gross operating revenues during 1920, of \$34,475,372, ranks as the second largest gas and electric company in the United States. Its gross earnings are exceeded only by the Commonwealth Edison Company of Chicago, while they exceed those of the New York Edison Company that supplies the metropolitan area of New York City.

This is some record and we of "Pacific Service" feel proud of it. We note, too, that our company's plants and properties account at the close of 1920, stood at \$164,655,623, of which \$91,875,790, or almost 60 per cent, represents cash actually invested in new construction and the acquisition of properties in the last 15 years. That we are taking further steps to keep pace with the rapid development of our State, commercially, agriculturally, industrially and every other way, may be gathered from the statement in our annual report that there will be brought to completion at an early date hydro-electric installations of 138,741 horsepower aggregate capacity which, added to 16,756 of additional steam elec-

trical installation, gives 155,497 horsepower to be added to our electric generating and distributing resources.

A synopsis of the report appears elsewhere in this issue. We venture to think it is worth more than a passing perusal for it helps the reader in no small degree to realize the enormous progress made in recent years in the development of the natural resources of our State, and to picture for himself something of the glorious prospect that lies beyond.

In a recent address before the Commission of the Missouri Public Utilities' Association Mr. Martin J. Insull, of the Middlewest Utilities Company, Chicago, presented the case for the public utilities in unusually clear and commonsense fashion. He laid particular emphasis upon the necessity for educating the people in the fundamental economic features of the public utility business, for, as he explained, "It is necessary to make the public understand that the development of any community depends largely upon the utility service it receives, while the utility service it receives depends largely upon the treatment accorded the utility by the people of that community."

"People in general do not understand or appreciate that the ordinary utility company turns over its capital once in five years, while the ordinary business man turns his capital over two or three times a year," said Mr. Insull. "Nor do they appreciate the enormous amount of money that is invested in the public utility."

It is a commentary upon existing conditions that addresses of this kind are being given by prominent utility men all over the country. That they are being made is, we think, evidence of the necessity for making them. And, why? Merely because the public, as a whole, is not correctly informed upon the public utility situation. It has been widely decided that this condition has been brought about by the public utilities themselves, not only in neglecting to properly educate the public but, also, in remaining silent under the never-ending campaign of misrepresentation and abuse on the part of political demagogues having, apparently, every purpose in mind save that of helping to upbuild their several communities. It is reassuring to know that public utility men generally have awakened to the situation and are now one and all adopting a policy of the fullest publicity in

the direction of the public education. This policy should result in material benefit to both the public utilities and the public they serve.

At the Manufacturers' Power Conference of the Water Power League of America, held recently in New York, the repeal of the Federal Power and General Dam Act of 1919 was strongly urged. Among the prominent speakers was Mr. Charles T. Root, first vice-president of the league, who stated that the immediate duty before the league was to inspire the public mind with the necessity for the immediate development of the neglected waterways of the country.

"Private capital," said Mr. Root, "should be given assurance of protection if it is invested in power development, and the assurance that no commission of twenty or thirty persons should have the power fifty years from now to decide to change the rules of the business so as to wipe out values and leave bondholders with worthless securities on their hands."

In connection with the foregoing we quote the following editorial from the *Peoria "Star"*:

"Public utilities are a necessary part of modern existence. We could not get along without them. If the average citizen had to make his own gas and furnish his own water and his own street car transportation, he would find that the cost would be insurmountable. The man who pays a few dollars a month for gas, or for water for five dollars a year would case may be, would have to pay hundreds if he had to furnish these things himself.

"These are things to be considered when we come to settle with the utilities companies. Five-cent street car fares, seventy-five cent gas and water for five dollars a year would be fine—if they could be furnished for the sums mentioned above. As a matter of fact, the moment the public is convinced that it is getting a fair rate, most of the objections will disappear."

A Personnel Department, announcement of whose projected creation was made in our April issue, is now an established part of our company's working organization. Its main responsibility is to collect such information concerning every man and woman employee in

our company as may be available toward enabling a proper adjustment of the employment problem. The necessary information is obtained by means of a questionnaire sent to each employee, and the questions asked and answered mainly concern the employee's present terms and conditions of service, qualifications and attainments, ambitions and desires. Obtained in this way the information is, of course, strictly confidential and intended to be used only for the benefit of the employee concerned.

It is expected by the service of this department to help both employer and employee, that the one may know exactly what available material is at hand, and that the other may have an opportunity not only to do the class of work for which he or she may be best suited but, also, may have an opportunity for advancement when occasion offers. In other words, the Personnel Department is to act for the company as a sort of employees' clearing house.

Its purposes and aims were set forth by our company's president, Mr. Creed, at a luncheon of executives and department heads held recently in San Francisco. "There is an obligation in every management to know what material it has in its organization," declared Mr. Creed. "It is good for us to possess an inventory of what we have at our disposal. On the other hand, we feel that in a farflung organization like ours every employee should be anxious to embrace this opportunity to get a company conception of his job." Mr. Creed explained that it was not intended to interfere with any head of department in the selection of his office force; on the contrary, it was intended to be helpful to him, so that whenever a vacancy should occur he might go to the Personnel Department for suggestion, such suggestion being merely advisory and not binding in any way. The real purpose, then, of the Personnel Department was to be of service to the company, individually and collectively.

Another important feature of this department work will be to ascertain under what circumstances employees leave their jobs. This alone should reassure the employee as to the well-meaning of this new feature of our departmental organization.

Mr. Eugene G. McCann is at the head of the Personnel Department and is already engaged in the work of arrangement and classification.

Tidings From Territorial Divisions

East Bay Division

A wedding was the occasion of an electric range making its advent in the country district of Mission San Jose. The betrothal of Mr. George A. Darrow and Miss Edna Simes was a notable social affair of the community. The electric range was a special gift from the groom in the outfitting of the new home. It was purchased on condition that it would be completely installed within three days and that it would do "the work."

Mrs. Farnsworth, demonstrator for the East Bay Division, undertook the contract and also undertook to supervise the cooking of the wedding dinner. First the stove was shipped and installed in record time. Secondly, the cooking demands were elaborate. A bride's cake baked in a large milk pan was done perfectly. Then followed the roasting of three turkeys, two hams baked and salads to be prepared. There were 500 guests and this range did all the work excepting for the assistance of a small kerosene oil stove.

The electric range has now become a permanent member of the family.

Neptune Beach, Alameda, and the other bathing beaches came into their own Decoration Day. Some 60,000 pleasure seekers thronged the beaches. Bathing suits stock, dressing room accommodations, refreshment booths and hand-outs were exhausted before the demand was supplied. One supply withstood it all and that supply had not even been given consideration—fuel gas. It was the one inexhaustible in the food concessions.

Ah Go Way, was a Chinese cook in a sorority house in Berkeley. Ah Go Way was a good and highly respected cook, who, though delighted with his gas range equipment, nevertheless suddenly decided to live up to his name, and went away. The girls patiently waited and finally decided "Ah Stay Away," because the gas made the cooking so easy until a new cook could be found.

Figures showing the importance of the walnut industry have just been released by the Department of Agriculture at the University of California.

During the past year California not only produced 97 per cent of the walnuts grown in the United States but produced over 72 per cent of all the walnuts consumed in this country. Contra Costa County of this division is a large walnut section.

There have been many motors installed this year on farms for pumping and irrigation. A plant put in by Mr. Bracher of Irvington, is by far the best equipped. It is a 50 H. P. motor driving a deep-well modern pump. There is over a mile of submerged ten inch concrete irrigation pipe on the ranch. This plant will take care of more than one hundred acres of strawberries.

This same section has put in this season the largest acreage of sugar beets in its history. "Pacific Service" will be called upon later to irrigate this crop and then turn it into sugar at the Alvarado Mill.

One of the richest farms in the East Bay division is the Fair Ranch at Alvarado. For many years the farmers on this ranch have raised two crops and sometimes three a year. "Pacific Service" will now irrigate this ranch with a connected load of 70 H. P. and possibly another 70 H. P. in the future.

Of all the ancient implements of war, the only one still very much in use is the bow and arrow.

Quite recently a well known master of the lost art appeared in the Accounting Department of the East Bay division, and his execution was so deadly that three of our young ladies were mortally wounded. Their fellow workers presented each one with a silver service to help them in their new state in life. After which the Misses Howard, Skeahan and Sanders left the service of our company.

It is noticeable that after their departure a few others were found to have been slightly touched by Dan's darts, so we are marking time and waiting for new developments.

E. B. DE VISION.

Colgate Division

To the average dweller in Oroville or Marysville, these days, every tract of land is a potential golf course, every rise and hollow an excellent natural hazard, and every bright day fitting weather for this most fascinating of sports.

About a year ago Marysville commenced to talk golf. The fever spread so rapidly that before long the entire community was affected, and out of the enthusiasm there grew, first a club, then a nine-hole course, later an excellent tournament and now there is strong agitation favoring a club house.

The signal success met in Marysville has set Oroville to talking in terms of golf, and at a recent meeting of the Oroville Chamber of Commerce discussion of the project developed considerable interest and enthusiasm and early action is promised.

The Marysville tournament was concluded early in June with Clarence Rankin, of Marysville, claiming title to the Dr. J. H. Barr trophy for which the tournament was played. Rankin's skill at golf has been developed entirely upon the home course. He secured the trophy by defeating several veterans of the game, rendering his achievement the more remarkable. It is planned to have a club-house erected some time during the autumn.

That the youth of the Colgate division is ambitious for learning would appear from reports given out by our various high schools in the division, showing that an average of 75 per cent of the graduates this year are planning to seek higher education in universities, business or technical colleges or along other lines. Elaborate commencement exercises distinguished the graduation of seniors from Marysville, Oroville and Colusa high schools. Williams, Lincoln, Gridley, Wheatland, Biggs, Live Oak, Sutter Union and Maxwell schools also graduated large classes.

After an interval of nearly fifty years, steamers may once again ply the Feather River as far as Marysville, if plans of the Marysville City Council and allied civic organizations are realized. County Horticultural Commissioner G. W. Harney, former secretary of the Chamber

of Commerce, recently addressed a communication to the city council calling attention to several important facts in connection with opening the Feather River for navigation, among which was the fact that Congress has appropriated funds for this work but the funds have never been claimed.

In early days Marysville was head of navigation on the east side of the Sacramento valley; but with the filling of the channel great sand bars were formed, rendering navigation impossible.

The novel sensation of breakfasting while floating several hundred feet in the air was experienced recently by a party of Marysville people who were early morning guests of the Friesly Aircraft Corporation for a "soar" in the giant Friesly Falcon airplane recently built at Gridley. Those in the party were: Mr. and Mrs. W. G. NewMyer, Arthur Gorwood, James Kaffen, Campbell Bishop and Homer Dobbins. Harold Friesly, president of the airplane company, was also present.

When a dizzy height had been attained, Friesly served a delicious breakfast to his guests.

A contest which will attract peach growers and horticulturists from all parts of the state and advertise the California peach industry throughout the East is being outlined by the Sutter Farm Bureau along the lines of a similar contest conducted last season.

The Cannerymen's League of California will give several handsome trophies to successful contestants, while the grower gaining the greatest number of points will receive the Yuba County Chamber of Commerce sweepstakes cup, now held by Miss Elaine Wilbur, winner of a majority of the prizes last year.

This season nine counties will be represented, it is stated by W. U. Hudson, secretary-manager of the farm bureau. At least one hundred entries are expected from Sutter County alone.

The crops entered are graded eighty per cent for state of perfection of the fruit; ten per cent for condition at delivery and ten per cent for condition of the orchard after harvest. This method of grading may be slightly changed this year, owing to the effect upon the fruit of the early spring frosts.

F. B.

Shasta and West Side Divisions

Willows water works improvements. The Ries Drilling Company has completed its contract on the new 16-inch well, and will have the rig off of our property early in June. The well is artesian, 720 feet deep, with a steady flow spilling from the top of the casing. The new 75 H. P. direct-connected motor and the 15-inch deep-well Byron Jackson turbine pump have arrived, and as soon as the concrete foundations are finished they will be installed. Foundations for the water tower are also being laid. The tower and tank will be fabricated steel, the tower will be 100 feet high and, will support a 100,000 gallon tank.

Ground plans which have been received from the San Francisco office provide for beautifying and parking the entire property. In the center of the block will be the tower, around which a low concrete curbing is to be built. The new well is in the southwest corner and three prospective wells have been spotted for future development, one in each of the remaining corners. A parked area circles the entire block. Graveled drives and walks will run through and around the property. This is an improvement that has long been needed, as our present facilities are far from sufficient to meet the steady growth of the town.

The gas works at Willows is also to be rearranged and improved immediately. The gas compression tanks are being changed from their present locations, and a station meter and two high pressure station regulators installed. Two new 60 H. P. boilers have been ordered and will be cut in for service in about six weeks, on the present site of the compression tanks, the old boilers having been condemned as inadequate and unserviceable. The removal of the old boilers will allow for the extension of the warehouse, which has become so cramped that proper protection and storage of materials is almost impossible.

Plans are being drafted for a new building to house the gas works.

The company's new transmission line from Cottonwood to the Hat Creek plants, which will be used first as a 60,000 volt line and eventually at 220,000 volts, is being rapidly pushed to completion. At the time of writing, all poles and steel towers are set up with the exception of

about a 15 mile gap. Wooden poles are used on level runs and steel towers for deadends and long spans. Several car loads of cross arms, insulators, and copper and aluminum cable have been delivered to Palo Cedro, a point of convenience on the Bella Vista railroad out of Anderson, for distribution. The copper cable consist of 49 strands of No. 10 wire, a trifle over an inch in diameter; steel-cored aluminum cable will be used over the Burney mountains. It is expected that the line will be completed by some time in July when Hat Creek plant No. 1 will start up.

The month of June will find all proposed reconstruction of the 60,000 volt line completed from Kennett to Maxwell Junction, thence to Colusa Junction, also the Hamilton-Colusa lines. At present the Corning-Orland Junction line is out, leaving the Orland Junction-Hamilton line the last stretch to be reconstructed.

The summer irrigation load is on. A heavy demand is noticed throughout the system. The voltage factor is the most serious of the problems, though we are pleased to state that as yet very few complaints have been made, due to the increased line capacity through the reconstruction of all Sacramento Valley and Colusa lines. We are just able to hold our own at the main points of delivery, Chico and Colusa. Operating the systems under these conditions has, no doubt, a serious effect on our equipment, but the risk is necessary for the benefit of the public, and keeps up the good earned name "Pacific Service."

During the days in May from the 20th to the 26th, Clarence Brown of the Volta power house made wireless experimental tests, both telephonic and telegraphic, at the Redding office, with good results. A temporary aerial was put on top of the Redding office building. Telegraphic radios were picked up from the Atlantic coast and other distant points. Avalon conversations were easily and distinctly heard every evening, Brown's new transmitting set was operated out at Volta by Neal Drew, this being its first real try out, and came in with good results, and to top these results Brown has received correspondences from stations at Los Angeles, and several near points, stating that they picked up his signals in good form.

Foreman Ed. Devoe of Inskip takes the fisherman's prize this season. The catch is probably the largest ever made in any of the company main canals, the prize, a rainbow trout, measuring 25½ inches and weighing 7 lbs.

B. W. G.

San Joaquin Division

Mrs. E. J. Walker has returned to her work in Tracy Office after two months' absence due to sickness.

Work has commenced on razing the old Physician's Building, at the southwest corner of Sutter and Market Sts., Stockton, which property adjoins the offices occupied by the Company. The new Masonic Temple will be erected on this site which will be a Class "A" structure costing \$400,000. An additional \$50,000 will be expended on furnishings.

The Company is planning on metering the water services in the City of Stockton in the next two years. Fifty per cent of the services will be metered during 1921, and the remaining 50 per cent will be completed by December, 1922.

Meters are being set at the rate of twenty per day, and it is expected to complete the installation of 4,500 meters by December 1st.

We have recently completed the installation of a street lighting system in the town of Brentwood and the people of that town intend to stage a big celebration in the near future, to dedicate the installation of street lights.

A contract has been awarded this Company to install and maintain the street lighting system in the town of Byron.

Transformers have been received for the new Woodbridge substation which was authorized under G. M. O. 11837. The site has been leased, the right of way for the new pole line surveyed, and work will commence shortly.

Mr. and Mrs. A. J. Cates, foreman and operator, respectively, at our Middle River substation, are enjoying a five weeks' vacation in the East.

Warren E. Brown, troubleshooter for the Electric Department, is enjoying his vacation of two weeks at Strawberry.

Work is being rushed on the construction of the 30,000 volt line from La Grange Power House to Don Pedro dam site, a distance of about 6½ miles, to serve the Modesto and Turlock irrigation districts with approximately 900 horsepower at Don Pedro for construction purposes. The districts demand power by July 1st. La Grange ditch and flume are being cleaned and put in order in preparation for flooding by the irrigation districts in order to generate power for construction work. A G. M. in the amount of \$20,000 has been approved, and two construction crews are working on the job.

A contract has been signed by the Modesto and Turlock irrigation districts and the Sierra & San Francisco Power Company, whereby the latter and its lessee, the Pacific Gas & Electric Company, will give up all water rights on the Tuolumne River above La Grange power house to the irrigation districts, in exchange for which the irrigation districts agree to furnish the power company with 10,000,000 kilowatt hours per year for a period of twenty-five years. 10,000,000 kilowatt hours is estimated to be about one-tenth the annual total output of the proposed Don Pedro Power House.

Mr. Russell Higby, M. & S. clerk in Modesto office has returned from a two weeks' vacation at Railroad Flat on the south fork of the Mokelumne River. He says that among other pastimes, his party enjoyed ice-skating and ice-boat- ing. Some summer vacation!

LILLI.

De Sabla Division

THE WILSON RANCH

The consideration of the Wilson ranch by the State Land Settlement Board as the site of its next colony in Northern California offers an opportunity for organized community effort. It will be of the highest advantage to Chico if the ranch shall be secured for this purpose. It has been in the minds of the members of the State Board for almost two years past, and such obstacles as exist can be readily overcome by earnest concerted effort. This would be an improvement

for all time, increasing each year in value to Chico as a tributary district and serving as a second example to the world of the superior agricultural resources of the region around the city.

IN MEMORIAM

Charles F. Nicholl, life long resident of Centerville passed away at the Enloe Hospital from the effects of burns received at Centerville power house a month ago. He was 62 years of age and is survived by one brother, James Nicholl of Centerville.

Charles F. Nicholl was born December 4, 1858, at Centerville, the second of three sons of Mr. and Mrs. John G. Nicholl. He had lived at Centerville his entire life, following the trade of carpenter besides conducting a ranch with his two brothers at Helltown, two miles above Centerville. He had always been in good health and was in the employ of the Pacific Gas & Electric Company at its Centerville power house when the accident occurred which led to his death. Beside his brother, he leaves a host of friends in Butte County to mourn his death.

North Bay Division

In various parts of the division, more particularly in the vicinity of Petaluma, this Company is extending its electric lines miles at a time, into the country to supply the progressive ranchers who, with the aid of our product, are transforming their dwellings into up-to-date homes with all the modern appliances than minimize the drudgery and brighten the home. This is a progressive country if the electric industry is the industrial barometer it claims to be.

Another indication of progress is the determination of this section of the country to excel in the building of schools. All of our people are alive to the issue, with the result that nearly every community in the North Bay Division has already built a new school or has one in contemplation. High schools are being enlarged and their facilities in manual training are continually on the increase. "Pacific Service" is on the job here, also, helping to build the citizens of tomorrow.

LOCAL MAN IS MARRIED TO COLUSA GIRL

Without taking even their closest friends into their confidence, Harry B. Martell, appliance salesman with the local offices of the Pacific Gas and Electric Company, and Ethel Stow, popular Colusa girl, slipped off to Sacramento Saturday morning and were married in that city. Telegrams announcing the wedding were received this morning by General Manager A. J. Stephens.

Mr. and Mrs. Martell, after their marriage, departed from Sacramento for San Francisco via river steamer and are now enjoying their honeymoon in the bay cities. Upon returning here they will take over an apartment at The Collins.

—Vallejo Times, June 13th.

San Francisco Division

GAS GENERATION DEPARTMENT

In spite of the general depression in most industrial lines, this department has enjoyed a good healthy increase in the "send-out" to date this calendar year. May the industrial and house heating department keep up the good work!

Number 6 Potrero generator goes down next month for a general overhauling and recheckering. Three years of almost continuous operation and over three billion cubic feet of gas manufactured without recheckering. This amount of gas made required over half a million barrels of oil. If you are interested in figures, these will give you some idea of what the largest oil gas generators in the world can do and are doing day and night, summer and winter.

Work of converting an old gas holder tank into a fresh water reservoir has just been completed at Potrero. Should the regular water service fail we will have ample water in reserve to operate the plant for eighteen hours.

J. M. DICKEY.

ACCOUNTING DEPARTMENT

Miss Violet Hoffman resigned her position with the company in May, and will be married on June 28th to Mr. Harry Lasater Edgerley. The couple will make their home in San Francisco. "Pacific Service" extends congratulations.

B. J. D.

Pacific Coast Gas Men Enjoy the Hospitality of the Southland

By W. M. HENDERSON, Secretary Pacific Coast Gas Association.

A stirring event in the young life of Los Angeles was the occasion of the mid-year gathering of the Coast gas men. Saturday, May 14th was set aside by proclamation of President Wm. Kapus as a holiday in honor of the second annual get-together dinner.

The day's program was an exceptionally good one. Frank Weiss as director-general and producer put on the show, to him is due the credit for the excellent entertainment. As an educational feature a trip to the gas works of the Southern California Gas Company was arranged. This took well. Fully sixty visitors enjoyed the trip. The plant is undergoing considerable reconstruction, much of which is completed. The new generators were the particular attraction as these are the largest single units of the straight shot oil gas apparatus as yet constructed.

The dinner was served at the rooms of the City Club. Over 180 members of the Pacific Coast Gas Association assembled for the dual purpose of enjoying each other's company and satisfying the appetite. Incidentally, they were compelled to suffer the usual penalty of such gatherings, speeches by the officers. As an antidote, however, a stimulating talk on Americanism was presented by Captain John S. Fredericks, an honorable citizen of Los Angeles and a tower of strength to the cause of good citizenship.

Mr. Henry Bostwick of San Francisco, vice-president of the Association, presided over the meeting. His remarks were upon coming events, the next get-together dinner at Portland in July and the annual meeting in September at Del Monte. Among the other speakers was Mr. Baurhyte, vice-president of the Los Angeles Gas and Electric Company. His remarks are well worth mention as he gave some figures to illustrate the tremendous development of the gas business in the Southwest. In Los Angeles his company is one of two which serve the public with gas. This fuel has arrived at such an essential place in the life of the community that during the past

season and at the present time the peak hour output in Los Angeles is and has been, for his company, over 50 million feet and for the two companies over 80 million. The gas is partly natural gas, the balance produced by oil gas generators.

Full appreciation of the difficulty experienced in serving this demand can be best realized from the figures presented, which showed increases in peak-daily loads from 35 million cubic feet to over 50 million cubic feet within two days time. This to fall off again, only to return a few days later. Enormous stand-by plant and storage capacity is essential. The Los Angeles Gas and Electric Company, to keep pace with the demand, is this year enlarging its plant and system at an expenditure of over \$5,000,000.

The membership committee, F. E. Seaver chairman, was allowed the privilege of the necessary time to present the results of his very good efforts to convert gas men into members. As an evangelist Mr. Seaver would send Billy Sunday back to the ball-park. Through his efforts fully fifty souls have hit the trail during the past month. Membership blanks are at a premium since Mr. Seaver opened up.

Mr. George R. Adams, a guest of the Association, entertained the members by many stories and memories. It is pleasant to think that not all of the talent is within the ranks of the gas industry and the consumer has yet a little to rely on. Mr. Adams if not within the industry is at least a consumer and as such he is essential to our cause. He was a refreshing treat and our life would be the better with more such men.

Captain Fredericks concluded the evening program. All eyes are now focused on the next event. From indications the annual meeting will be the greatest gathering of gas men that the Association ever produced. Del Monte is an ideal place, September is a perfect month and the gas business is in a healthy state.

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The first step in the Safe investment of your funds is the selection of a good, reliable bondhouse.

You can't go wrong on the bond, if your selection of the bondhouse is right. You may fairly rely upon its recommendations, knowing that its standards safeguard your interests.

Blyth, Witter & Co. never compromise safety for the sake of a few extra dollars interest. Our issues are drawn up in conformity with the highest standards of safe investment.

If you have funds for investment, you ought to send for "Investment Opportunities of Today" in which are described a selected number of very attractive issues.

*If you have never bought bonds before,
ask also for a copy of "Principles of
Safe Investment" sent without obligation.*

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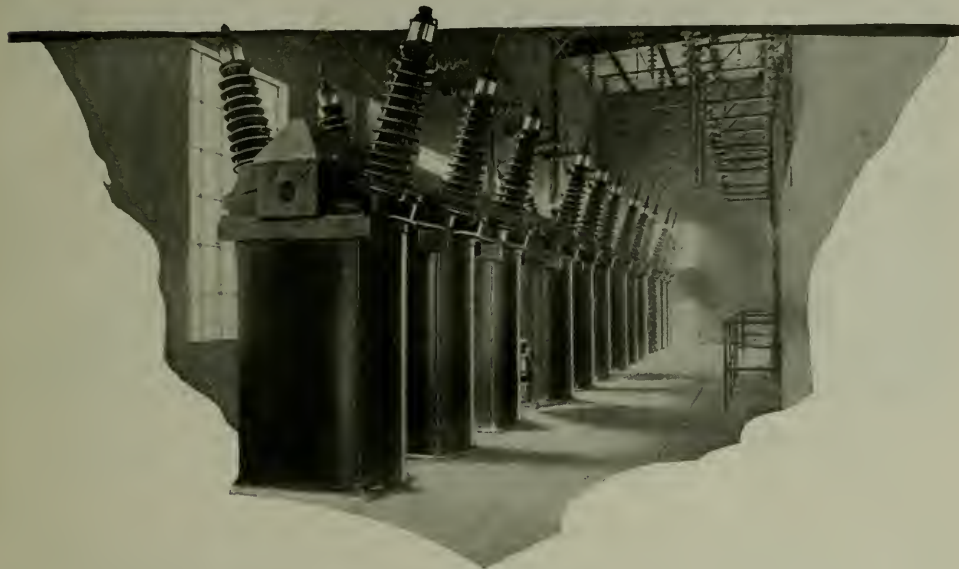
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has greatly furthered the exploitation of
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Oil Circuit Breakers Equipped with Explosion Chambers

In the hydro-electric station through which Los Angeles water supply serves a double purpose by supplying the city with both drinking water and electric power, protection is furnished for this 110,000 volt system, by a bank of General Electric type FHK-36 Oil Circuit Breakers.

Developments like this would be next to impossible if the design and con-

struction of protective apparatus had not been continually improved so as to keep pace with changing conditions of practice.

These FHK-36 breakers are representative of a line that is the result of constructive effort and applied experience on the part of General Electric Engineers working to perfect oil circuit breakers that will function under all service conditions.

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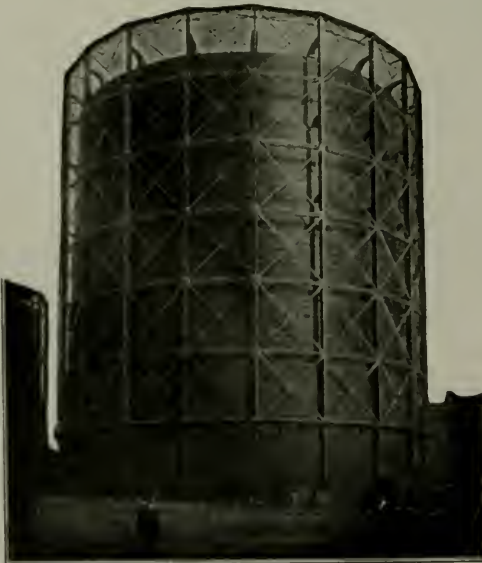
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Gas Holders
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District Office: Rialto Bldg, San Francisco, Calif.

Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

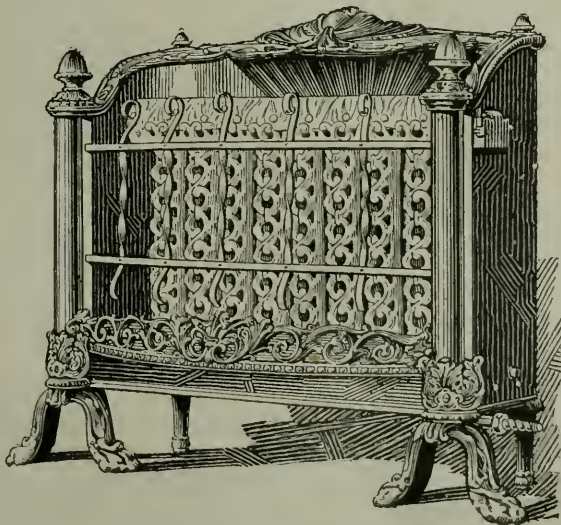
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

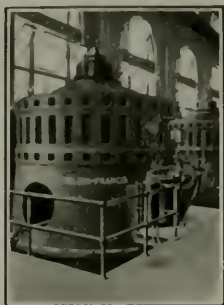
No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



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PELTON

Impluse and Reaction Turbines

Built in unit sizes of from $\frac{1}{4}$ HP to 25,000 HP.
To operate under heads of from 20 feet to 2,500 feet

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WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

RIVETED STEEL PIPE, STAND PIPES, PENSTOCKS OR ANY SPECIAL
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ELEVATED STEEL TANKS—OIL OR PRESSURE TANKS

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STEEL WIRE FENCE WITH SELF-ANCHORING STEEL POST

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Create Economy All Along the Line

IN FIRST COST • ADJUSTING • REPAIRS • UPKEEP
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GAS METERS

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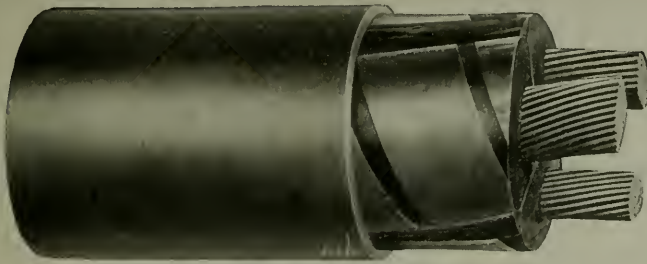
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Pacific Meter Works of American Meter Company

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 $\frac{1}{2}$ Actual Size

STANDARD Light and Power Cables

Meet every reasonable requirement as regards quality, price and delivery.

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The Fulton Gas Pressure Governors FOR ARTIFICIAL OR NATURAL GAS

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

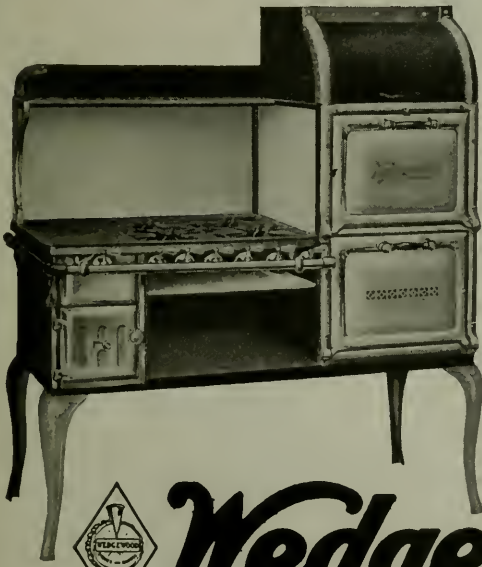
The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

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 PITTSBURGH, PA.

336 BK Nickel Trimmed with Warming Oven



A Combination Gas Range

THAT PERMITS OF EVERY
SELLING ARGUMENT

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

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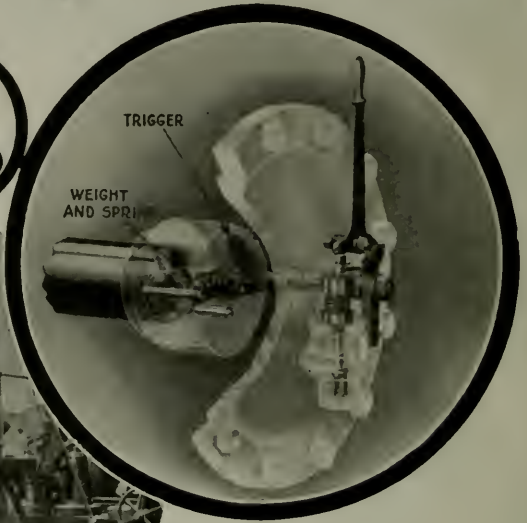
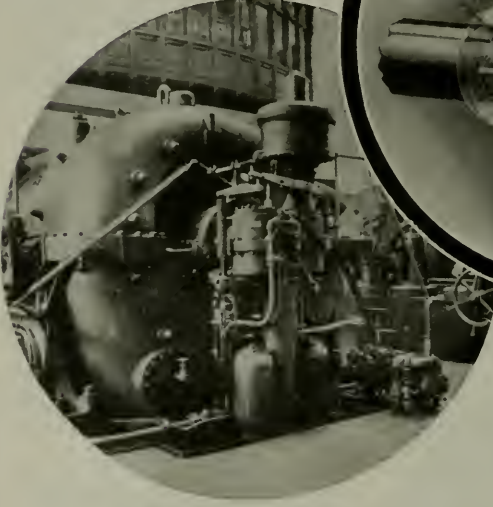
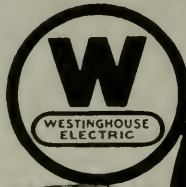


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The Westinghouse Automatic Safety Stop consists simply of a weight crossing the axis of the turbine shaft, held in place by a spring, and revolving in oil.

When a predetermined shaft speed is reached the Safety Stop functions instantly. The centrifugal force of the moving weight increases more rapidly than the resistance of the spring, which allows the weight to go to the end of its travel with sufficient force to overcome any reasonable resistance.

At the end of its travel, the weight releases the trigger shown below, the trigger, in turn, releasing the steam pressure from beneath the differential piston of the throttle valve, thus shutting off the steam supply to the turbine.

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The Aristocrat of the Gas
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A Willing, generous service, cheerful in spirit—helpful
by strength and conservative when necessary to
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TO OVER 576,000 CONSUMERS OF

GAS • ELECTRICITY • WATER • STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

	DIRECTLY		INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity.....	171	1,120,503	60	153,449	231	1,273,952
Gas.....	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic).....	18	61,719	8	15,488	26	77,207
Railway.....	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
*Alameda.....	28,806	*El Verano.....	400	Meridian.....	200	*San Leandro....	5,703
*Albany.....	2,462	*Emeryville.....	2,390	*Millbrae.....	300	*San Lorenzo....	500
*Alvarado.....	1,000	*Escalon.....	600	*Mills.....	400	*San Martin.....	250
Alviso.....	517	*Esparto.....	290	*Montevideo.....	2,554	*San Mateo.....	5,979
*Amador City... 377		*Fairfax.....	250	*Milpitas.....	300	*San Quentin....	3,000
Anderson.....	750	Fairfield.....	1,008	Mission San Jose.....	500	*San Rafael.....	5,512
Angel Island... 500		Fair Oaks.....	300	Modesto.....	9,241	*Santa Clara....	5,220
Antioch.....	1,936	Fall River Mills	300	*Mokelumne Hill	900	*Santa Cruz.....	10,917
*Aptos.....	300	Farmington....	300	*Montezuma.....	5,479	*Santa Rosa.....	8,758
Arbuckle.....	900	*Fenton.....	300	*Morgan Hill... 646		Saratoga.....	500
*Atherton.....	500	Folsom.....	2,000	Mountain View	1,888	Sausalito.....	2,790
*Auburn.....	2,289	*Forestville.... 250		Mt. Eden.....	200	*Sebastopol.....	1,493
*Barber.....	500	*Fresno.....	45,086	*Napaville.....	6,757	Shasta.....	200
Belmont.....	375	*Gilroy.....	2,862	*Napa.....	1,782	*Shellyville....	200
Belvedere.....	616	*Glen Ellen.... 1,000		*Nevada City... 500		Sheridan.....	250
Benicia.....	2,693	*Gonzales.....	500	*Newark.....	750	*Smartsville....	300
Ben Lomond... 400		*Grass Valley... 4,006		*Newcastle.....	1,251	*Soledad.....	400
*Berkeley.....	56,036	*Gridley.....	1,636	Niles.....	1,000	*Sonoma.....	801
*Biggs.....	683	Grimes.....	500	*Novato.....	400	*Sonoma.....	1,684
Bolinas.....	200	*Groveland.....	500	*Oakdale.....	1,745	*South San Francisco	4,411
Brentwood.... 400		*Guerneville... 250		*Oakland.....	216,261	Standard.....	500
*Broderick.... 700		Hamilton City.. 500		Oakley.....	200	*Stanford University	2,700
*Burlingame... 4,107		Hayward.....	3,487	*Occidental.... 600		*Stockton.....	40,296
Byron.....	350	*Hercules.....	373	Orland.....	1,582	Suisun.....	769
Campbell.....	600	*Hillsborough... 931		*Oroville.....	3,340	Sunnyvale.....	1,675
*Capitola.....	300	*Hollister.....	2,781	*Pacifica.....	300	Sutter City.....	250
Carmel.....	638	Honcut.....	500	*Pacific Grove... 2,974		*Sutter Creek... 920	
Cement.....	1,000	Hughson.....	250	*Palo Alto.....	5,900	Tehama City... 196	
Centerville.... 1,000		*Ione.....	1,000	Paradise.....	500	Tiburon.....	400
Ceres.....	637	Irvington.....	1,000	Patterson.....	694	Tracy.....	2,450
*Chico.....	9,339	*Jackson.....	1,601	*Penn Grove.... 200		*Tres Pinos.....	300
*Colfax.....	573	*Jamestown.... 750		*Perkins.....	300	*Tuolumne.....	1,500
College City... 250		*Kenfield.....	500	*Petaluma.....	6,226	Turlock.....	3,394
Collinsville... 200		*Kenwood.....	300	*Piedmont.....	4,282	*Vacaville.....	1,254
*Colma.....	1,500	Keswick.....	200	*Pike City.....	200	*Vallejo.....	21,407
*Columbia.....	200	*King City.....	1,048	*Pinole.....	967	Vina.....	300
*Colusa.....	1,846	*Knights Land- ing.....	400	*Pittsburg.....	4,715	Vineburg.....	200
Concord.....	912	*La Grange.....	200	*Port Costa.... 900		Walnut Creek.. 538	
Corkle.....	300	*Larkspur.....	612	Princeton.....	300	Warm Springs.. 200	
Corning.....	1,449	Lathrop.....	600	*Red Bluff.....	3,104	Waterford.....	250
Corte Madera.. 607		*Lewisville.... 200		*Redding.....	2,962	Watsonville... 5,013	
*Cotati.....	200	*Lincoln.....	1,325	*Redwood City.. 4,020		Wheatland.....	435
Cottonwood... 500		Live Stock.....	300	*Richmond.....	16,843	Williams.....	650
Coyote.....	200	*Livermore.... 1,916		Rio Vista.....	1,104	*Willows.....	2,190
Crockett.....	1,500	*Lomita Park... 600		Ripon.....	500	Winters.....	903
Crow's Landing	300	*Lomita.....	300	Riverbank.....	200	Woodland.....	4,147
*Daly City.....	3,779	*Loma Park.... 500		*Rocklin.....	643	Woodside.....	300
Danville.....	400	*Los Altos.....	500	*Rodeo.....	300	Yolo.....	350
Davenport.... 300		*Los Gatos.....	2,317	*Roseville.....	4,477	*Yuba City.....	1,708
*Davis.....	939	*Los Molinos... 200		*Ross.....	727	Total Cities and Towns..	1,347,844
Decoto.....	300	*Madison.....	300	*Sacramento.... 65,908		Add Suburban Population...	368,115
*Del Monte.... 300		*Manteca.....	1,286	*Salinas.....	4,308	Total Population Served..	1,715,959
Denair.....	200	*Mar Island.... 600		*San Andreas... 1,183			
*Dixon.....	926	*Martinez.....	3,858	*San Anselmo... 2,475			
*Drytown.....	200	*Marysville.... 5,461		*San Bruno.....	1,562		
*Duncan's Mills	250	*Maxwell.....	500	*San Francisco.. 506,676			
*Durham.....	750	*Mayfield.....	1,127	*San Jose.....	39,642		
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1—Gas only.

2—Gas and Electricity.

3—Gas, Electricity and Water.

4—Gas, Elect. and St. Railways.

5—Electricity and Water.

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Pacific Service Magazine

Volume XIII



Number 1

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Prominent figures at the convention of Pacific Coast section, N. E. L. A., at Del Monte. The upper portrait is of Mr. Lee H. Newbert, the lower of Mr. M. H. Aylesworth. In the center, reading left to right, are Messrs. A. G. Wishon, San Joaquin Light & Power Corporation; John A. Britton, Pacific Gas and Electric Company; R. H. Ballard, Southern California Edison Company; John B. Miller, Southern California Edison Company; E. B. Criddle, Southern Sierras Power Company.

Outstanding Features of the N. E. L. A. Convention at Del Monte

By FREDERICK S. MYRTLE.

The fifth annual convention of the Pacific Coast Division, National Electric Light Association, was held during the second week in June this year at Del Monte, California. It was attended by over three hundred of the best representative men in the various branches of the electrical industry—industrial, commercial and financial.

The unusually attractive surroundings made of this a pleasure outing as well as a business gathering; but, while the recreation program provided by the committee in charge proved sufficiently alluring, the business sessions received attention, and two features of unusual interest not only to the men of the electric industry but, also, to the great commonwealth of the west attracted full attendance, namely, the report of the Public Policy Committee and the Pacific Coast Industrial Conference. Concerning the last named, indeed, it may be said that the benefits derived and to be derived from this alone made the convention worth while.

The report of the Public Policy Committee was presented by Mr. John A. Britton, to whom this task had fallen on many previous occasions. In its opening, the report called attention to the fact that during the past year upwards of 100,000 horsepower of electric energy had been added to the already existing plants upon the Pacific Coast, and stated that "with the program of development as announced by the several power companies it would appear as if in the next decade at least 100,000 horse power per annum, or a total of 1,000,000 horse power, will

be added to the hydro-electric power resources of the State of California, and at a cost for generating plants and distribution systems in excess of \$500,000,000.

"That this amount of power will be readily absorbed in the increasing growth of the western empire of the United States is evidenced by its steady and continuous growth in the last decade. It must, too, be noticed that much of this development has been due to the steady encouragement given the power companies by the regulatory bodies, and recognition of the necessity of earning a reasonable return upon the investment, with allowance for depreciation, has given encouragement to investors in utility securities. Little or no difficulty has been met with in financing of past development, and it is confidently anticipated that the reputations established by the companies through a proper encouragement of regulation will provide the means for a continuation of the prosperity of these companies in the years to come."

It is noticed that already the interconnected systems on this coast permit of the transmission of energy from the Oregon line to the Imperial Valley, returning in a northerly direction from the Imperial Valley to the State of Nevada.

The recognition by the public utilities of the necessity for better public relations was discussed in the report as the most important thing that has happened since the war period. "That note is sounded wherever men in the public utility industry gather for conference,"

said the report. "The necessity for it is urged by all regulatory bodies; it is now the slogan of the press, and the far-seeing and wise executive takes public relations as his text and preaches that gospel not only to his employees but to the public whenever opportunity affords."

"It is too often the fault of large organizations that the man who at some distance from the head office is compelled to come into contact with the people and to represent by act and deed the corporation itself is not educated in the policies of the company nor given sufficient authority to speak for and represent it; thus his position is minimized, and of necessity the reputation of the company must suffer. It would seem that in these days, when an agitated public has a rather left-handed view of public service corporations and what their activities mean in the development of the particular section which they serve, the company should have as representatives in those sections men who should be able to speak authoritatively on all questions. The one danger confronting large organizations is the fact that the personal touch of those who have authority to speak is lacking, and it would seem advisable in many cases to try the experiment of having each particular district appeal to the public served in that district as the home company. By such action much misapprehension of the activities of the head office would be cleared away."

Upon the subject of customer ownership the report estimated an amount of about five and one-half billions to be now invested in gas and electric utility securities in the United States. Gauging the annual average growth at eight per cent, this will mean an annual requirement of nearly \$500,000,000 of new money in the immediate future, or an aggregate of \$5,000,000,000 in the next ten years; and at least a goodly proportion of this great sum must come from the pocket book of the consumer through his ownership of the junior securities of the utilities which serve him. Said the report:

"There is probably no better way in which to allay the unrest of the people and the dissatisfaction which in most cases is imaginary with public service bodies, than to have the consumers interested as stockholders and partners in the enterprise. The attitude of the public service corporations should be not only to enlist the investments of consumers but to make it their business to see that these investing consumers are given full facts concerning the operations of the utility of which they are a part, so that they may act as agents in their respective communities to help in establishing true relations between utility and public. That interest fully centered, it is certain that much of the agitation for municipal ownership or state control will rapidly disappear."

Other important matters discussed in the report included the Federal Water Power Bill, the regulation problem and the activity of the Investment Bankers' Association in considering the affairs of public utilities generally and in co-operating in the consideration of their needs and requirements with representatives of the National Electric Light Association.

The report took up also the matter of disseminating information concerning the management, operation and financing of public utilities, even to the establishment of educational classes in the public schools and universities. "The committee knows of no more fertile field for the dissemination of true knowledge of the business of public utilities than is afforded by high schools and universities, for the plastic mind of youth is ready to absorb information. Too commonly the error exists in public utility affairs of telling the story to those cognizant of the facts and leaving the uninformed masses ignorant of the truth in connection with this great industry.

"We believe it to be true that every man interested in the public utility industry of this country looks forward to the day when his motives will not be misconstrued and maligned, and when the great

public will have the same confidence in his expression as it has in the expressions of any other merchant with whom it deals for the necessary commodities of life."

Under the heading, "The Service of the Public Industry" the report closed with the following:

"We of the industry realize that the days of profiteering in public utilities has gone down into the dim and distant past, and that of all the businesses of this great nation there is none in existence today that serves the public with less margin of profit than does the public utility. It is practically doing business on an economical cost basis, earning only sufficient to pay the interest on the money which it must borrow to develop and carry on its work of service and lay a sufficient margin aside to care for the depreciation on its property through its devotion to public use. With a confidence in the public served, your committee feels that this past year has been a year of understanding, and that the realization will come within a brief period to the masses of people that the utility which serves it is as much an integral part of the state as is the most humble merchant or manufacturer, and that an enterprise which helps in the development of the industries of the state, and without which the state could not prosper, is entitled to a fair hearing before the court of public opinion.

"It has been estimated that one horsepower developed in the state of California enriches the state to the extent of approximately \$50,000 in the creation of new industries, in additional population, in the building of homes and the distribution of wealth among those who help to build up this great commonwealth. Assuming the development of 100,000 horsepower annually by the companies of this section, it would mean that the material wealth of this Pacific Coast section would be added to by the sum of \$5,000,000,000 annually contributed in

conneccion with the stable increase of power, not for today but for all time.

"To sum up, let the companies here represented determine that this convention has been helpful to them in confirming in their minds the necessity, first, for better public relations; second, better care and concern in the welfare of their employees; third better service to their consumers; fourth, better interpretation to the public mind of what their industry means to those immediately served."

The Pacific Coast Industrial Conference was held on Friday, June 10th, the closing day of the convention. Its purpose was to present clearly and definitely to the minds of the people of California the relation borne by the power companies to the industrial growth of the state. Special invitations had been sent out to the interior press to attend this conference and, as a result, a considerable number of newspaper representatives were present. The conference was opened by Mr. Lee Newbert who, after stating its general purpose, turned over the gavel to Mr. John B. Miller, president of the Southern California Edison Company.

The first speaker was Mr. Robert Sibley, president of the McGraw-Hill Company of California, and editor of the *Journal of Electricity and Western Industry*, a publication to which the electrical industry in California is indebted for most valuable assistance and encouragement. Mr. Sibley ran rapidly over the development of electric energy, from the day when Joseph Henry found that dashing a horse-shoe magnet in front of a wire caused a current of electricity to flow along that wire, to the present day when it is proposed to transmit electric energy from the mountains of northernmost California to the bay of San Francisco at 220,000 volts.

By means of slides and charts, Mr. Sibley showed the wondrous accomplishments of the electrical industry in the West, with the important part it had

played and was playing in industrial development. Mainly through its agency the great West was shown to be progressing more rapidly than any other section of the United States and the speaker reported the results of an exhaustive survey made through the co-operative effort of fifty-eight power companies, through which not only was the great future of this country west of the Rockies assured but the confident prediction was made that by 1950 the population of our Golden State will exceed ten million souls.

Mr. Sibley is an enthusiast on this subject. He talks to the point and convincingly, and his remarks evidently made deep impression upon his audience.

Mr. H. G. Butler, who has just recently retired from the position of power administrator in the employ of the California Railroad Commission, supplemented the address of the previous speaker with some eloquent figures upon capacity and demand, showing that if the demand for electric power continues to increase at its present rate inside of twenty years the six million horse power estimated as the maximum of development in California within that period will have been entirely swallowed up. In fact, said Mr. Butler, far-seeing men were already looking outside of California for the additional water power supply of the future, in the hope that the solution of the long distance transmission problem will have been arrived at by the time the necessity arrives for harnessing the mighty rivers of adjoining States.

Mr. Butler named the five main uses of electric power in the west as mining, agriculture, manufacturing, transportation and domestic. No one, he thought, need question the market for all the power that might be generated and made ready for distribution; the real question was—will there be power to meet the market?

The next speaker was Mr. W. E. Creed, president of the Pacific Gas and Electric Company. He told of an aggregate out-

put of three billion kilowatt hours last year and told his audience that it represented in man labor the combined work of ten million men. Its value, then, to the commonwealth of California would readily be seen when it was realized that this three billions of kilowatt hours in electric energy had been developed and distributed at a cost of one-half of one per cent of the wages of ten million men at an average of \$3.00 per day a piece.

Mr. Creed showed charts which revealed the relative magnitude of eleven western states to their eastern sisters in water-power development and resources. The picture presented was a startling one, for it showed the western states actually crowding the eastern states off the map. Furthermore, it was good to hear that water-power development in the west was generated and distributed at the lowest cost and at the most reasonable rates of any in this country. Another eloquent picture presented by Mr. Creed showed the growth of kilowatt hours generated in this section of the country as compared with the growth of population. Statistics compiled after the most careful investigation gave the number of western homes using electricity in 1910 as seventy-five per cent of the whole, while in 1920 the percentage had risen to eighty-three. In the east the percentage today stood between thirty and forty. The calculation, therefore, that a billion dollars would be needed for water-power development in California during the next ten years was based on present growth; but Mr. Creed thought it likely that the proportion would increase, for oil was running out, so that the burden of railroad transportation might within the period stated be thrown upon the power companies. California today was using more oil than she was producing and the whole country was in the same fix. It was just such a prospect, Mr. Creed thought, that justified the great consideration given to the Colorado River project recently initiated by the Southern California Edison Company.

The great problem, then, to be met by the power companies would be one of finance. Today the aggregate investment in bonds stood at two billion dollars and about the same in stock. Practically all of that investment record had been built up since 1902. Now, in view of the huge sums which must be realized to enable the estimated development of the next ten years, it would be seen that at least from six to eight hundred millions of new money must be secured, and this could not come out of the revenues of the companies. Capital, therefore, must be attracted to the electrical industry or the contemplated program must fail of completion.

Taking "Pacific Service" as an example, Mr. Creed told his audience that in 1920 his company had distributed nearly eleven million dollars as the wages of labor and nearly five million dollars as the wages of capital, namely, interest. Every hundred thousand dollars of revenue represented five hundred thousand dollars of capital investment. The figures there presented showed most clearly what lay before the power men whose business it would be to secure the necessary funds for their representative developments.

"The investor is not moved by sentiment," said Mr. Creed; "the appeal of necessity has not moved one dollar as yet for the financing of Europe. The controlling factor is the safety of the investment. It must be sound, intrinsically; there must be a certainty that the interest will be paid and there must be reasonable controvertibility on the part of the securities."

Meanwhile, Mr. Creed congratulated the men of the electrical industry in California upon the permanent establishment of the principle of state regulation. He thought that had California gone back to local regulation there would have been no money forthcoming for investment, no program of development. The Railroad Commission of California had adopted the policy of looking forward.

Its judgment had been shown to be sound and honest, "though," said Mr. Creed, "we may differ at times as to facts."

In conclusion, Mr. Creed said that while from sixty to seventy per cent of new money needed might be obtained from the sale of bonds, the remainder must come from the investor. He thought, therefore, that the common stockholder was the most important man to be considered. He stood as the guarantor of the preferred stock and bond holder. To enlist his active support, therefore, the conception of the public service industry as the vanguard of growth and development must be brought home to him as a great economic truth. "And we, as the public utilities, must do our part," said Mr. Creed. "We must have abiding faith in our enterprise and we must also have abiding faith in the willingness of the people to learn the truth."

Mr. R. H. Ballard, vice-president and general manager of the Southern California Edison Company, spoke on the outstanding features of the national situation. He told his audience something of the super-power project by which it is proposed to dam the Colorado River and build a reservoir of forty million acre feet capacity. Some idea of the volume of this water, he said, might be gathered from the estimate that it meant ten million men drinking a quart of water a day apiece, from the time of Noah to the present. Mr. Ballard had presented this project to the convention of the parent body in Chicago. He also spoke on the subject of customer ownership, and to us of "Pacific Service" it was good to hear that at the Chicago convention credit had been given to our company for being the pioneer of this plan of home financing.

Mr. A. Emory Wishon, general manager of the San Joaquin Light and Power Corporation, closed the discussion with an address upon "self-interest." He showed why every citizen, no matter what his business, was interested in the prosperity of the public utility operating in his

community. Of the billion dollars that had been spoken of as required for the development of the next ten years, forty-seven per cent will be expended for labor and fifty-three per cent for material. That meant more work for the laboring men and, by reason of the circulation of vast sums of money, general prosperity in almost every line of endeavor.

At the banquet held that evening, Mr. John A. Britton presided as toastmaster. Among the speakers were Mr. M. H. Aylesworth, executive manager of the National Electric Light Association, who spoke of harmony among those interested in electrical development as essential for its growth and expansion; Mr. James H. McGraw, president of the McGraw-Hill Company, New York, who predicted a great industrial future for the Pacific Coast; Mr. Sylvester Weaver, president of the Los Angeles Chamber of Commerce, who congratulated the electrical men upon the growing confidence in the industry on the part of the general public; Mr. Al Joy, representing the California Raisin Growers' Association, who preached the gospel of co-operation as an essential to progress and development, and Mr. Frederick J. Koster, chairman of the board of directors of the United States Chamber of Commerce who thought the power resources of California made general development possible and that through co-operative organization would the conscience of the community best find expression.

At the general meeting held on the closing day, the following were elected to serve as officers of Pacific Coast section for the ensuing twelvemonth:

President.....A. B. WEST
First Vice-President.....J. B. BLACK
Junior Vice-President.....L. M. KLAUBER
Treasurer.....HENRY BOSTWICK
Executive Committee: A. E. WISHON,
 GEO. CAMPBELL, WILLIAM BAURHYTE,
 S. M. KENNEDY, WILLIAM SHEPARD,
 G. E. ARBOGAST, ROBERT SIDLEY, R. M.
 HOLTERMANN, P. H. BOOTH AND R. S.
 MASSON.

Mr. Lee Newbert, of "Pacific Service," in retiring from the presidency of Pacific Coast section, looks back upon a year of earnest endeavor. Concerning the work of the convention he has this to say:

"The opportunity to meet the other fellow and to get his viewpoint is what makes conventions worth while, and because this is true the conventions of the Pacific Coast division, N. E. L. A., will always serve a useful purpose.

"The work during the year of the technical committee was of a very high order and of consequent value to the electric industry. Mr. L. M. Klauber, who presided over the several meetings of the technical committee, was well repaid for his labor by the splendid results achieved.

"The results obtained by Mr. R. A. Balzari, as chairman of the membership committee, were most gratifying. Membership is the life blood of the division and through the untiring work of Mr. Balzari this life blood supply was well increased. The large number of memberships held by the employees of the Southern California Edison Company is deserving of special mention.

"The outstanding feature of the convention was the Industrial Conference held on the afternoon of the closing day. At this session the growth of industrial development in the West was inseparately linked with the growth and development of the electric power business. By charts and slides it was made entirely clear that without an adequate supply of cheap electric power the industrial growth of the West would be greatly delayed. The necessity for proper development of the water-power resources of the West for the generation of electric power was well demonstrated. The electric industry will lose much if the message of this Industrial Conference is not carried to the people of the entire West. This is the task that the industry has before it today."

What are the Public Service Companies?

By W. E. CREED

The following is the sixth of a series of short papers by our company's president on matters vital to the public service, particularly the problems in whose satisfactory solution the public service corporations and the public they serve are mutually concerned.—EDITOR PACIFIC SERVICE MAGAZINE.

No single word or phrase will adequately describe the public service companies. They are, of course, corporations, but corporations with very definite contractual responsibilities to the public and subject to very explicit limitations in respect of their operations.

Obviously, their fundamental quality is that of public servant. They render essential, vital services. These services are rendered for the public, at its direction, under its control and to the extent of the public's demand. The companies exist not for themselves but to meet the public need for their services. Without them, the even flow of modern life would be stopped, populations scattered and existence for large numbers imperiled.

In their business relations with the public, the companies are contractors doing a job at cost. The contract is a pretty strict one. The contractors must do their work efficiently; they must not exceed reasonable or necessary costs; they must find the money for the work and at the same time assume all of the risks involved, and finally they must account in detail for the costs they incur for labor, supplies, materials, money and all other items necessary to carry on the job.

The purpose of rates is to give the contractors these costs. They collect from the rate payers the money necessary to pay the bills for wages, for materials and supplies, for taxes and depreciation and for a fair rate of interest on the capital employed in their work. The result is a job for the public at cost. Profit does not exist in any business until more than a reasonable rate of interest is earned upon the capital used in the business. A private business, such as a dry goods business, which earns no more than interest on its capital, is not a profitable business, and is not regarded amongst bankers or business men, or by its owner, as a profitable business.

Nevertheless, the public service business is conducted on the principle that gross earnings must not be more than sufficient to meet operating costs, in-

cluding taxes and depreciation, plus a fair interest return on the value of the properties used for the public. It can succeed and properly function only if rates are promptly fixed to meet increased costs as they occur. When the cost of labor rises, or additional taxes are imposed, or there is an increase in the costs of other items over which the contractors have no control, then these increases must be reflected in the rates, because the contractors have been compelled, under the theory of regulation, to operate at current costs and without sufficient revenues to build up reserves to take care of fluctuations in costs due to changing business and economic conditions.

Another aspect of the public service companies is their character as industries. All of them are producers of service; many of them are manufacturers of commodities. They furnish useful and profitable employment to hundreds of thousands of men and women, purchase huge quantities of materials and supplies to be used in their processes of production, thus giving a very substantial support to other industries, and very often they are contributors to the store of human knowledge through inventions and improvements in the arts and sciences which add to the comfort, convenience and safety of the people. There is, however, one very marked point of difference between them and the great majority of other manufacturers. The public service companies deliver their commodities and services direct to the consumer without the intervention of any profit-taking middleman. The public enjoys the full advantage of buying direct from the producer. While the world strives to solve the problem of high cost distribution in other lines of business, the public service industry is giving its customers direct delivery at minimum cost.

Finally, the public service companies are the main support of our social and economic structure. Probably one of the first things to attract the attention of a discerning Man from Mars would

be the dependence of modern life and business on these companies. *The wood pile, the old oaken bucket and the tallow dip have gone.* In their place have come great industrial and engineering works to supply, not single families, but immense urban and rural populations which could not otherwise exist. The majority of our people no longer live directly on or from the soil. They are massed in great cities and suburbs where they could not themselves supply their vital necessities if they would. Others must do it for them. Almost over night the great public service companies have come forward to carry this burden of civilization. They serve in two ways. First, they meet the direct personal needs of individuals for light, heat, water, transportation and communication. Second, they make possible the intricate system of production and distribution, which the genius of modern business has created and developed. The populations of our great cities would

scatter and disappear if there were to be a breakdown in the production of food and clothing or in the distribution of these necessities. Production and distribution in their turn depend upon the public service companies. Take away the telephone and telegraph, and at once our complex system of food distribution is crippled. Curtail transportation and forthwith there is a proportionate stoppage of distribution causing serious distress. If all production were to cease, the suffering would be more widespread than under a complete breakdown in distribution, because even people at the sources of production would be denied its benefits. And present day production could not continue without the light, heat, power, water and transportation supplied by the public service companies.

In short, the business of the public service companies is public business; their success is public success, and their failure would be public disaster.

Central Safety Committee Reports Progress

At a recent meeting of the Central Safety Committee at which were present Messrs. F. A. Leach, Jr., P. M. Downing, J. P. Coghlan and V. R. Hughes, reports were received which showed that the local Safety Committees which were organized at the first of the year were actively at work and were making very valuable safety recommendations. Most of these recommendations were reported as being put into effect as soon as made.

At the suggestion of Mr. Downing a special committee was appointed to revise the working and safety rules of the various departments of the company. The following were appointed on this special committee:

Mr. F. R. George, Engineer of Electrical Operation; Mr. W. S. Yard, Gas Engineer; Mr. V. R. Hughes, Safety Inspector.

It was the sense of the Central Committee that the rules to be prepared by the special committee should apply to all operations and should not be confined to any one department. Under this plan one set of rules will cover work common to all departments, as for instance, trench excavation, whether for gas, water or electrical purposes.

The committee considered the duplication of effort involved in the investigation of serious accidents by both safety committees and special engineering committees. The committee concluded that

there was an educational advantage in having the safety committees join in these investigations, and it was decided to continue the practice of having the safety committees investigate all serious accidents, but to have these committees sit in with the special committees whenever possible rather than make separate investigations and reports.

The committee gave considerable attention to the methods followed by the district automobile investigation committees maintained in the East Bay and San Francisco divisions. It was noted that these committees made very close investigation of automobile accidents in which employees were involved, that the facts of the accidents were checked up against the Motor Vehicle Act and that the committees very often recommended severe discipline for employees involved.

It was decided by the committee that the educational work of the Central Committee should be extended by having Mr. Hughes prepare and deliver brief lectures on the responsibilities of foremen for accidents, and on the facts and circumstances of recent interesting and serious accidents. Mr. Hughes has since undertaken this work and has already delivered lectures at many power houses, district offices and other places where foremen and workmen are brought together.

Honor to Men of "Pacific Service"

[The following clippings from Marysville papers concern work done by our company's employees in restoring service following the disastrous fire in that city. It is with much pleasure that we reproduce these commendatory notices, that our readers may know how the men of "Pacific Service" upheld the spirit of their organization. Concerning the record made Mr. E. C. Johnson, manager of the Colgate Division, writes as follows:

"Two facts should not go unmentioned in regard to this company's employees. Jack Barrett, our gas house foreman, remained on duty at the gas works and protected our property while his own house and all his personal effects were burning less than a block away, and he suffered a complete loss. William Reilly, our storekeeper, also assistant fire chief, was in charge of the fire fighters, due to the absence of the fire chief, and he also remained at his post while his own house and personal effects were destroyed. This, surely, is a record of unselfish devotion of which "Pacific Service" may well be proud.]

EDITOR PACIFIC SERVICE MAGAZINE.

P. G. E. WORKERS DO HERCULEAN TASK IN FIRE

(From Marysville Appeal, July 7, 1921)

Working in the face of great handicaps and against time, every moment of which was infinitely precious, crews of the Pacific Gas and Electric Company performed heroic service toward restoring power and lighting circuits in this city and surrounding territory Saturday afternoon during the terrible fire which gutted the eastern portion of the town. On all sides the highest praise is being given to members of the crews and the executives who directed them.

When the fire was first discovered men were dispatched to watch for possible falling lines and the current cut off from many circuits where poles were burned. When falling debris tore down the feeder lines on Fourth street, shutting off power from the water company's plant, several crews were immediately set to work and within three and a half hours service was restored, establishing a record for rapid line work.

The 60,000 volt crossing over the Yuba river was destroyed when the north mast structure burned, allowing the 11,000 volt wires which were carried on the same pole line, to fall into the river. This situation had been anticipated, however, and the lines cut out so that no damage was possible.

Workmen had a new structure erected and lines up by midnight Saturday, less than twelve hours following the trouble, which is considered another record achievement.

By dint of sheer hard work electric lighting and power service was restored in Marysville and Yuba City by 11 p. m. Saturday night. An hour later Linda township and Arboga service was re-

stored when the 11,000 river crossing was completed.

When the magnitude of the fire was realized by company officials gas was shut off from the mains. After firemen considered the conflagration under control gas was again turned on but so many services lay exposed and broken that the available supply of gas was rapidly exhausted and it was again shut off while workmen visited every lot where gas was formerly used and shut off the service. Although this was an almost herculean task, the city was again supplied with gas at 9 p. m.

Much of the credit for the excellent service rendered by the P. G. & E. is due to W. E. Eskew, superintendent of this division, who directed the reconstruction work. The gas work was in charge of Merle W. Bremer.

Thirty workmen labored continuously from the time the fire started until 6 p. m. Sunday without rest and were at work again early Monday. One extra crew was brought from Chico to assist and a special truck dispatched to Sacramento for supplies. Orders for supplies were sent in late Saturday afternoon and were received in this city at 2:30 a. m. Sunday.

PACIFIC SERVICE MEANS "PERFECT SERVICE"

(From Marysville Democrat, July 5, 1921)

Employees of the Pacific Gas and Electric Company are deserving of the utmost praise for their untiring efforts to maintain electric and gas service in Marysville during the big fire of Saturday. The employees, while working under an almost unsurmountable handicap, because the sub-station and the gas plant were completely cut off by the path of the fire, nevertheless succeeded in getting electric

power to operate the big pumps at the water works in service within a few hours after the wires had been demolished by falling walls and the necessity of cutting off the connections. Masts had been burned down by the fire and the tangle of wires was disheartening but the crews worked hard and had a service line to the water company in less than four hours. This, it must be remembered, was done by a small crew and they had to handle almost red hot materials in clearing away derbis. If they had not been able to get juice for the big pumps

it is doubtful if the steam pumping facilities would have been able to supply enough water for ordinary household purposes and certainly not enough water in event another fire occurred during the night. The gas supply was also cut off for many hours because the pipes in the burned section were red hot and it was feared that explosions might result if gas was turned into the pipes. However, the service was resumed by 10 p. m. "Perfect Service" is not a meaningless phrase with the P. G. & E. Co.

As Others See Us

By H. S. FURLONG, Department of Electrical Construction and Operation.

It is a quarter of five on a drowsy summer afternoon. The day has been a busy one. Perhaps there lies before you on your desk a great jumbled stack of miscellaneous bills, vouchers, orders, drafts, which must be examined and passed on before the day is over. Perhaps you are in the midst of an important conference with a prospective new consumer whose load will run in horsepower of three figures. Perhaps you have a trial balance to get out and an engagement with the only girl in the world at exactly 5:05. Perhaps you are in the midst of computing the kilowatt hours per year which the waters of Rumble Tumble Creek will produce with an effective head of X feet. It all depends on who you are and what your more or less important part in the welfare of "Pacific Service" may be.

There is a telephone resting on the extreme corner of your work-laden desk. It rings discordantly. Telephones always ring discordantly when you are busy. They are no respecters of persons. Your door may be locked or guarded by the ever efficient and pugnacious office boy. The telephone knows no barriers of wood or stone and steel. It jingles again.

The voice on the phone—"Is this the Gas Company?"

Your voice—"Yes madam, this is the ————department."

Voice on phone—"Well, my new gas stove seems to be broken. It doesn't work and I don't know what to do, I——"

Your voice—"Madam you have the wrong department. I told you this was the———department."

Voice on phone—"Didn't you say this was the Gas Company?"

Your voice—"Yes madam, but you have the wrong department. You should ask for the gas complaint department."

You hang up and begin to wrestle with that problem again and the little lady and her gas troubles are forgotten.

But how about the little lady? There is something wrong with her gas service. She doesn't know what it is. She cannot be expected to know. It won't cook, that's all, and it's getting late and hubby will soon be home for his dinner. So she rushes frantically to the phone and calls the company. They can fix it, they *must* fix it. She has never been inside the company's office, at least, no farther than the ground floor where she promptly pays her bill every month. The complexities of the departmental organization she does not comprehend. Probably she was not clear in her inquiries to the switchboard operator. Perhaps the switchboard operator made a mistake and rang the wrong local. The telephone operator has troubles of her own and the person who never makes a mistake is the person who never does anything.

Anyway, this is not intended for the operator but for you, you who answered the telephone and left the little lady to her own devices.

When you hung up your phone (if not

rudely—at least rather hurriedly) the operator supposed the conversation complete and pulled both plugs—Zing!—the nickel drops in the box of the lady's phone (she probably has a prepayment phone) and it is ten chances to one she hasn't another nickel in the house. The baby is crying, dinner is not cooking and she hangs up her phone with a sharp expression or bursts into tears, according to her temperament and the temperament of her homeward bound hungry spouse. At any event the incident has not sustained the proud slogan that Pacific Service is both "courteous and continuous." To her mind it is neither, the gas has ceased to flow. It may be in her own piping or apparatus, perhaps it is; but the point is that she failed to get connected to the right department through the neglect and laziness of a really well meaning busy man in a busy office. It would have taken but a moment to have the operator connect her to the complaint department, to see that she received the little service requested and the result: A service wagon speeding to help a tired little woman out of her difficulty and a friend and booster created instead of an enemy and a knocker.

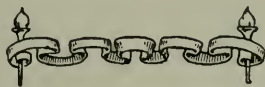
For it is just these little, apparently trivial incidents by which the consumer passes judgment upon us. "Pacific Service" is judged not by the twenty-odd hydro-electric plants grinding out energy in the Sierras, not by the cubic foot capacity of its great gas holders, not by the thousands of miles of copper wire spreading out across the length and breadth of the State, but rather, for instance, by the courtesy of the man behind the counter who takes the consumer's complaint.

First and foremost, it must be remembered that the consumer is a human being. Being human, like ourselves, the

ego is more or less prominent. As a human being your consumer dislikes to be considered merely one in the 500,000 of "Pacific Service." He likes to be noticed. When he pays his bill or makes application for service or registers a complaint, a "Thank you" is appreciated. A "Thank you, sir" makes a still greater impression upon him and if the man behind the counter, upon glancing at the bill, hands back the receipt with a "Thank you, Mr. Blank," he gets the impression that his individuality is recognized and that he is a valuable customer. And he *is* a valuable customer. A satisfied customer is the best asset a utility may have.

Though its generating, transmitting and distributing equipment may be the most modern and efficient, though the machinery of its organization may function smoothly and noiselessly, if the human element is missing, if courtesy, tact and the friendly spirit are lacking on the part of the men and women coming in contact with the public, then that utility cannot and will not progress. Its very existence is threatened before the great court of justice of public opinion.

By each individual is "Pacific Service" judged, and in this respect the meter reader, the service man, the telephone operator, the collector and the counter man are perhaps the most important, as they come in contact with the public most. To them falls the not always easy task of being always polite, always cheerful, always helpful. But to all of us, no matter what our capacity, comes at some time the opportunity to deal with the public direct, and when that time comes let us remember that by our actions or spoken word this company, our company, is judged. May judgment passed be favorable to our company and ourselves.



The Heat Treatment of Steel and What it Means

By D. H. PELLE, Gas Sales Bureau, San Francisco Division.

This article is intended to give those who are not familiar with the subject an idea of what is meant by the heat treatment of steel. In this I will treat particularly of carbon steel.

Throughout all of our industrial shops it becomes necessary that a certain piece of metal must be made into a certain shape, and there really are only two ways of accomplishing this. One is to heat the metal and hammer it into shape, the other to get a harder piece of metal and chip it into shape or put it in a machine and machine it into shape. However, if it be chipped or machined, it becomes necessary to have a piece of metal that is harder than that to be shaped to accomplish the task.

We should first find out how we are able to get hard tool steel (carbon steel). Steel is an alloy containing two constituents, iron and carbon. Actually there is not such material in commercial use. Along with the iron and carbon are other substances, such as phosphorus, sulphur, silicon and manganese. These are rated as impurities. They are as a rule not at all neutral, they produce modifications of quality and character. An important illustration of this concerns carbon. Steel never contains carbon in a large percentage, two per cent is the maximum, but very small changes in the percentage of carbon mean large changes in the character of the steel.

Carbon steel is divided into two classes, low carbon, or machinery steel, and high carbon, or tool steel. Low carbon steel is soft and will not harden readily. High carbon steel is harder and will harden readily.

To give you an idea of what very small percentage of carbon is used in the manufacture of steel, I will say that only about one pound of carbon is used to every 100 pounds of finished steel. It does not seem very much, but the percentages of carbon govern the hardness of the steel and, also, govern the heat treatment of a tool.

Now that you have an idea of what carbon steel is, I will go on to the heat treating of the steel. It becomes necessary for us in order to harden steel to

first put the steel in the fire and make it hot and then cool it as quickly as possible; but there is a certain heat for the different percentages of carbon, in other words, the more carbon there is in the steel the lower we heat the steel and the less carbon in the steel the more we heat it. In explaining this, I might say that in the heating of carbon steel we reach what is called the critical or saturation point of steel or rather, the decalescence point, and at this time the carbon saturates through the steel as water through wet sand, and it is at this point that we want to quench *i. e.*, cool the steel in water or any medium which will trap this structure. In other words, this part of heat treating is one big game of trapping the structure of steel at the saturation point, which is the hardest possible structure to be obtained. The structure that we would like to trap is called austenite, but commercially we have no means of cooling it fast enough and it reverts to martensite. Should we not trap martensite it reverts to sorbite, troostite, etc., each structure a softer stage. The steel is made up of grains or crystals, and if we allow the steel to exceed the critical temperature of the steel the grains grow in size and the steel will become weaker; so you can see why we are so particular to trap just the proper structure. It would be all right if, upon cooling, the steel would go back to the natural size of the grain again, but this is not the case, if the heats are exceeded the grain will remain the same upon hardening.

After the steel has been hardened we find that if we were to use it so it would be too hard and break, so we now put it through a tempering process which takes a portion of the hardness away, but gives it great toughness and releases the steel from hardening strains. This is accomplished by heating the steel very low in temperature, say from 300 to 600 degs. Fahr. according to the toughness required for the particular work to be done.

Now, the one big feature of steel treating is the manner in which it is heated and in this, making no exceptions, gas

is the most logical fuel. Why? Because it will make no difference what kind of fuel you burn, you will first have to make a gas and that gas is made in the combustion chamber and the products of that fuel come in contact with the steel as the fuel is not completely consumed. Not only that, it is necessary that you should have oxygen to support combustion, and when the mix is made in the combustion chamber of the furnace you deliver more than is necessary and the escaping oxygen does harm

to the steel with the waste fuel; but with gas, the mix with oxygen is done outside the furnace in proper proportion and delivered into the combustion chamber, an explosive mixture almost free from impurities injurious to the steel.

This brief explanation is given merely to give an idea of what is meant by heat treating and that when an installation of a gas furnace equipment is made you may know that it is another step someone has made in advancing the heat treatment of steel.

The Explosion In Gas Analysis

By Frederick C. Jones, Chemist, Gas Department

The determination of hydrogen, methane and its homologues and the residual nitrogen by the explosion of a fraction of the gas remaining after the other constituents have been removed has been the source of more variations in results than any other part of gas analysis. It has been customary to ignore the volume of gas shut off in the capillary leading to the potassium hydroxide solution, as being too small to be taken into account. In the case where the potash pipette is permanently connected with the three-way stop-cock of the burette, the volume of the capillary tubing often amounts to 0.4 c.c. The amounts of the absorbable gases that are not determined by reason of being pocketed in this space of .4 c.c. are too small to be noted. For example, with 10 c.c. of CO in the sample of 100 c.c., the capillary would contain only .04 c.c. of CO. When, however, the explosion is made by using only 12 c.c. of a residue often amounting to 80 c.c. the 0.4 c.c. now becomes considerable. Suppose, to use whole numbers, the air introduced for combustion be 72 c.c. Upon mixing the gas and the air in the potash pipette, the .4 c.c. of gas in the capillary becomes part of the mixture, which, in all, will be 12.4 c.c. gas and 72 c.c. air, .4 c.c. of which mixture will now remain in the capillary, 84 c.c. being returned to the burette for explosion. The process of mixing will have taken .341 plus c.c. of the gas from the capillary, leaving an equal volume of air in its place. The fraction of gas then used for combustion will therefore be 12.34 c.c. instead of 12 c.c., that is, the burette will contain $\frac{84}{100}$

x 12.4 of gas. The .3 c.c. is $\frac{1}{40}$ or $2\frac{1}{2}$ per cent of 12 c.c., and by taking it into account the amounts of hydrogen and methane will be reduced $2\frac{1}{2}$ per cent of the volumes that would otherwise be assigned to them, while the nitrogen will be increased by the sum of these same amounts. This will make a difference of 10 or 11 BTU in the calculated heat of combustion of a gas containing 45 to 50 per cent hydrogen and 25 to 28 per cent methane. It is evident, then, that allowance for the gas in the capillary is the only procedure that can make the results of successive explosions agree. It explains that frequent lack of agreement of the second explosion with the first, while the second may agree with subsequent ones; for, after the first explosion practically only oxygen and nitrogen remain in the capillary tubing, and conditions in the second explosion while not duplicating those of the first will be identical with the conditions of all following explosions. In making a second explosion for the purpose of confirming the first, the capillary should, of course, be filled with the residual hydrogen, methane, nitrogen, before the sample for explosion is measured.

The volume of the capillary may be easily measured by allowing the potassium hydroxide solution to rise until it reaches the stopcock, and noting the increase in volume of a carefully measured amount of air in the burette.

An alternative method is to mix the gas and the air in some inert pipette, the weak sulphuric or a water filled pipette.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION



"Real Art," a "live" sketch presented at the P. S. E. A. banquet.

The annual "Pacific Service" banquet under the auspices of our association was held this year at the Municipal Auditorium, Oakland, on the evening of Saturday, June 18th.

It was distinguished from its predecessors in that it had by far the largest attendance of any held since the P. S. E. A. was organized; also, that for the first time it was held across the bay from San Francisco. The metropolis, as the company's headquarters, had held right-of-way over this annual reunion for many years, but this year an across-the-bay movement was started, and San Francisco graciously yielded to the "modern Athens."

It was rightly described in one of the local newspapers as a "good fellowship" banquet. That description, in fact, fitted it like a glove. It was brimming over with good fellowship. When it is remembered that the men and women of "Pacific Service" came from as far north as Redding, as far south as Fresno and as far east as the summit of the Sierra Nevada, and that every one of the twelve territorial divisions which constitute the "Pacific Service" working organization was adequately represented, it will be seen that the spirit of good fellowship which is so essential to real prosperity in any enterprise of several thousand

employees is to the fore in ours. They came in by train, by auto; every known means of transportation was brought into requisition. The result was an attendance of upwards of sixteen hundred souls.

Think of that! A dinner to sixteen hundred men and women at which all entered into the full enjoyment of the affair, delighting not only in the well cooked food spread before them but, particularly in the enthusiasm that makes an affair of the kind worth while. Paper caps, balloons, community singing, laughter, and the whole picture in a setting of bright flowers and banners that left it something to be remembered.

The guests were arranged by divisions and there was much good humored rivalry among these. Some good stunts were pulled off, notably when San Francisco's name was called and the stage curtain rolled up showing a cleverly constructed electrical picture of the two rival bay cities connected by a stately bridge. This, needless to say, was the work of the employees of the San Francisco division, and with no little pride they vociferously greeted its appearance.

At the speaker's table Mr. A. U. Brandt, chairman of the Pacific Service Employees Association, occupied the presiding chair. With him at the table were seated President W. E. Creed and Mrs.

Creed, Mr. John A. Britton, Mr. P. M. Downing, Mr. F. A. Leach, Jr., and Mrs. Leach, Mr. A. F. Hockenbeamer and Mrs. Hockenbeamer, Mr. D. H. Foote and Mrs. Foote, Mr. John D. McKee and Mrs. McKee, other officers of the company and the officers and members of the executive committee of Pacific Service Employees Association. There were three guests of honor who, needless to say occupied prominent places. These were James H. McGraw, president of the McGraw-Hill Publishing Company of New York, Mr. M. H. Aylesworth, executive manager of the National Electric Light Association, who, like Mr. McGraw, had come all the way from the Atlantic seaboard to attend the recent convention of electrical men at Del Monte; and, Mr. Robert Sibley, publisher of the Journal of Electricity and Western Industry.

An orchestra played during the dining, but the regular program of entertainment was held in the adjoining theatre after the feast was over. When the signal was given and the great outpouring came expressions of appreciation were heard on all sides. As Mr. Creed was passing out of the dining hall he was heard to say to a prominent official of the company, "Isn't this a great sight?" It was a proud night for him, for it was the first annual banquet he had attended since his election to the office of chief executive. It need not be said here that his countenance exhibited no more satisfaction at the success of the affair than did that of Mr. Britton.

It was a gala night in the theatre. Every seat in the auditorium was occupied, including the galleries. As most of the diners wore their vari-colored caps, the effect was most striking. "Pacific Service" orchestra came to the front here and then chairman A. U. Brandt opened the speech-making with a word of welcome. In this he sketched the history of the Pacific Service Employees Association since its inauguration to the present day, and cheers greeted his announcement of the last report from the membership committee which showed a record of 4062 active members. Among the prominent features of recent inauguration Mr. Brandt instanced the death benefit plan, the sectional organization, which had done so much toward bringing in the whole family of "Pacific Service" from the divisions around the bay to the remotest interior, the educational classes which had been designed for the purpose of interesting as well as instructing both

men and women employees in the various phases of the company's activities, the recent decision to appoint a regular director of education whose authority shall extend over the entire "Pacific Service" territory; and last but not least, the plan of an extensive program for 1922.

The next speaker was President Creed, who with evident feeling told his audience that the gathering before him exceeded his most sanguine expectations. "You wouldn't see that under municipal ownership," he said, with a smile, and the cheers and laughter that followed showed that his audience agreed with him. Mr. Creed, as upon previous occasions, spread the gospel of co-operation. Co-operation within and without the company organization. He thought it was an unsound thought to attempt to distinguish between the people and corporations that serve them. They were indissolubly interconnected and interdependent. Business, Mr. Creed declares to be the very foundation of American life, as much a part of it as churches and schools, and he thought that when the realization of this had come generally home to the hearts of the American people there would come with that realization a sense of the necessity for co-operation in every line of business, to the ultimate sweeping away of the obstacles of ignorance and distrust that had impeded progress in the past. In his conclusion Mr. Creed touched upon the newly created Personnel Department which he thought, would prove a great aid to the company, its employees and the State of California.

Mr. John A. Britton, hailed by the familiar title of "the dean," followed Mr. Creed with an address upon similar lines. He spoke for solidity of expression and thought. He asked all within sound of his voice to be sponsors and spokesmen for the great utility they serve. "I see hope in the faces before me," said Mr. Britton, with emotion. "An army of one thousand persons bound together by one thought, one aim, one purpose, would prove irresistible. I want you to proclaim everywhere the honesty of purpose of the organization of which each of you is a part. Then there will be forward progress without obstacle. In such event the mass of men and women before me would be irresistible against any foe."

Mr. M. H. Aylesworth, as the speaker of the evening, also spoke for co-operation. He had had experience with public

utilities, for he was president of the Public Service Commission of Colorado at the age of 29 years. He referred to the political agitator who goes about denouncing the public corporations as a wholesale slanderer. "When he denounces the corporations he denounces you and every one of you," said Mr. Aylesworth to his audience. But he thought, the public and the public service corporations must pull together if they are to prosper. That they couldn't possibly prosper separately was his firm conviction. Mr. Aylesworth spoke in part as follows:

"Full realization of the fact that you are the Pacific Gas and Electric Company and that you are collectively known as a corporation but as individuals control the destiny of your company, is information which should ever be in your minds and hearts. The city of San Francisco and the state of California look to you and the members of your organization serving the public utility service for many conveniences and comforts of life. The development of the great Pacific Coast is largely in your hands, for no community can grow faster than its electric light and power, gas, telephone and street car service, which must necessarily lead the van of industrial progress. It is your duty to know the problems of your company and assist in informing the public in regard to your business, which is also the people's business and, therefore, they are entitled to the best service and honest information surrounding their business.

"I do not mean to say that we are always beyond criticism and I believe that we should always be ready to receive honest criticism from the people we serve, for it is only in this way that we can come in complete accord with the public.

"Many misinformed people love to speak of Wall street when referring to capital and, particularly, to the public utility business. Very few people know that the electric light and power companies of this country are really owned by 1,450,000 security holders. Many of our good people are owners in electric light and power companies, and, for that matter, all public utilities, and do not even know it. For instance, there are approximately 27,000 banks in this country, with 29,000,000 depositors. Now, the bankers seeking wise investments for their depositors have invested more than \$1,700,000,000 in public utility securities. Therefore, each depositor

has a \$63 interest in the public utilities and their prosperity. 'Bill Smith,' the man of the street who may have no apparent interest in the public utility in his town, but who has taken out an insurance policy to protect Mrs. Smith in case of his death, is also vitally interested, although he may not know it, for the insurance company, in seeking conservative investment, has placed more than \$300,000,000 in these securities of electric light and power companies alone and more than \$1,000,000,000 in all utilities.

"Many men sit behind their mahogany desks and insist that we must have a 'back-to-the-farm' movement. Most of these men have never been on a farm and never expect to be there. The 'back-to-the-farm' movement is coming largely through the use of electricity, for no man will live very long on a farm unless the wife is contented. Electric conveniences have made farm life desirable. More than 2,000,000 farms are already being served with electricity and the industry will reach 4,000,000 more within a short period. With public support the electric industry will do wonderful things in the next ten years. For, in that time the street railroad of the western country should be electrified and the great transmission lines of the power and light companies should be interconnected from coast to coast so that their domestic and industrial consumers shall continue to have at their command the most modern electric development in the world; for today the United States far exceeds any other nation in electrical progress."

A program of varied entertainment followed the speech-making. A musical sketch entitled "Down South," was presented by members of the Association, and was cordially appreciated. The cast was as follows: Old Black Joe, Harry E. Fossey; Topsy, Zita O'Connor; the Colonel, H. I. Milholland; the Colonel's wife, Mrs. A. U. Brandt; the violinist, Ralph Brandt; pickaninnies, themselves; chorus, (invisible) guests at the house party, Ruth Herbert, Rita McOmie, Alma Hogan, Loretta Hogan, Oral Carrere, Charlotte Rosenbach, Ingebor Larsen, Camille Looney, Helen Engleman, Louise Hummel, Camilla Dixon, Zita O'Connor, Dan Gustafson, Arthur Eggers, Sam Knapp, A. Mulford, John Gilbert, W. Stronberg, Grover Tracy, Ed. Wood, Richard Hunt.

Another sketch presented was under the title "Real Art," which included the following cast: Soloist, Miss Alice Tal-

cott; dancer Miss L. Giggs; society, Miss Agnes Buckingham; golf girl, Miss A. Bennett; winter, Miss M. Sullivan; spring, Miss N. Vogelotte, bathing girl, Miss O. Carlson; maid, Miss L. Melo; fairy, Miss Janice Street; artist Charles A. Carlson; purchaser, H. I. Milholland.

Great credit is due Mr. Chas. A. Carlson for his skill in designing and producing this sketch. Appreciation is also due the firm of Manheim and Mazor, of Oakland, for the beautiful costumes furnished by them.

The entertainment closed with motion pictures showing the company's Pit River development with snapshots taken at recent out-of-town gatherings, including that to the Sierra summit, in April, and the gathering at De Sabla the following month.

Altogether it was a wonderful evening. At the present time of writing it is difficult to see how it is to be surpassed. The rise and development of the P. S. E. A. is certainly something for every man and woman of "Pacific Service" to talk about.

F. S. M.

At the last meeting of East Bay section the officers of the organization voted to enlarge the activities begun by the Accounting Department by taking over the player piano which had been acquired for the development of community spirit. This good feeling among the employees of the department was so manifest that the ever wide-awake directors of the section lost no time in trying to spread this same spirit through all the division by making the departmental recreation center a pleasure gathering place for all.

At the same meeting the minutes of the last meeting of the executive council of the parent body in San Francisco were read, and an item relating to the organizing of a sick benefit and hospital department was very well spoken of. Next day the subject was taken up at the "Club" in the Accounting Department and voted on 100 per cent; the only suggestion offered being: "Make the dues enough so that we can start off flying."

We sincerely hope that something will come of this, for who knows but that some day a great building dedicated for the above purpose will bear our company's motto of "Service, Continuous and Courteous for All Ye Who Enter Here"?

Listen, people, I have something to say,

Of the P. S. E. A. on this side of the bay.

The Berkeley office was the first to go,

And I'm telling the world it was some show.

The Gas House Terriers were next in line

And if I'm any judge they put it on fine.

Then came the Frolic, "Oh Boy, Say,"

Nothing like it ever held by the Bay.

The Harbor View show was hard to beat,

Their coffee and cake was sure a treat,

"The Electric Men were there a mile

And all went away wearing a smile."

We journeyed to Crockett for our show in May,

It was a dandy show, and a perfect day.

The Accountants and Bookkeepers of Tug of War

Will add more honor to the East Bay's name.

That this is some record I know you'll agree,

So let us all stand and give the East Bay "Three."

J. L. H.

The Gas House Terrier's Athletic Club of Gas Station "B" entertained its friends at the Home Club, on Park Boulevard, Friday evening, June 17th. The evening was given over to a short program, consisting of boxing, wrestling and singing. During the evening, Mr. Al Derrick gave a short talk on the Club Benefit Plan." This plan has been adopted by the club at Station "B" and insures aid to any members of the Club who are in need of financial aid, incurred by accident or illness, not covered by the compensation act.

After the program, which was short and snappy, Fledderman's overseas orchestra furnished music for dancing. Although the club was handicapped in giving its entertainment on this date, the evening before the big dinner, the hall was filled and all present voted having had a very pleasant evening when the strains of "Home Sweet Home" were played at midnight.

H. C. DAY.

The business of luring the speckled beauties from the pools up in the high Sierras has called a halt to the social activities of the San Francisco Section for the month of July. However, the Social Committee has already outlined its work for the month of August, when it gets down to the real business of detailing the San Francisco annual event. This is figured to take place the first part of October, and while the importance of this event has already been given much thought by our committee, now thoroughly seasoned and drilled, if achievement is measured by faith the stability and high character of San Francisco section will be maintained on this occasion.

Our Educational Committee completed June activities by a meeting held in the Industrial Gas Laboratory, on June 28th. At this meeting Mr. E. G. McCann eluci-

dated the aims and purposes of the recently formed Personnel Department and the interest shown in this feature was indicated by the numerous questions asked. The answers by Mr. McCann left no doubt that the work of his new department is going to prove beneficial to employee and company alike.

It was the privilege of those who attended this meeting to see a motion picture named "Head Wins." Its message was clear and unmistakable. The worker who wanders from job to job following a rainbow that has no end, dominated by childish superstition about the pot of gold buried where the rainbow touches the ground.

J. A. J.

The following is from a report of our recent Employees Association Annual Dinner as viewed through the eyes of a representative of a San Francisco Daily:

KEYNOTE AT DINNER

"'Build the Bridge' was the keynote of development at the largest dinner gathering ever held on the Pacific Coast, when upwards of 2000 employees of the Pacific Gas and Electric Company sat at tables that completely filled the Municipal Auditorium Saturday night.

"The central theme of the dinner meeting, 'Development,' had its climax when the curtain on the stage rose with a spotlight playing its beam on a replica of the Ferry Building in San Francisco. Another spotlight then located the Oakland City Hall on the opposite side of the stage with the dark expanse of bay between. Then a second drop curtain rose and in the effulgence of light from a battery of scintillators was revealed a dream of the future, now believed to be well started toward realization, a bridge across San Francisco bay. And while the spectators gazed in admiration, an electric train of four cars traversed the bridge from San Francisco to Oakland. The transformation was greeted with prolonged applause."

H. B.

The first visit to Willows since the divisional organization was formed was the occasion on Saturday evening, May 21, of a very successful event both as regards attendance, hospitality and sociability; about 140 employees being in attendance at Maple Hall in the Masonic Temple Building.

Redding and Shasta district were well represented. Chico sent over a jolly contingency chaperoned by Mrs. Ike

Adams, while from Colgate division a number of machines brought delegates from Colusa and Williams. The employees of the Sacramento Valley Telephone Company had been invited, and a large number were in attendance, as were also a bunch of the men from the camps of the general construction department. Our own employees from Red Bluff, Tehama, Corning, Orland and Hamilton turned out in force and joined with Willows in helping to make the evening a pleasure for our visitors.

The business meeting was called to order at 8 p. m. by Clifford Bartlett, chairman. Various matters pertaining to the advancement of the association were discussed. Also, the matter of enlarging its scope from a beneficial and educational standpoint. Interest among our employees is particularly keen, and our membership growth was shown to be increasing. We still retain third place among the divisions. Mr. Milford, manager of the Shasta division, was empowered to arrange for affiliating the men of the Pit River construction work with our division.

Magazine day was set for June 4th, on which date employees were asked to collect and send to Redding any and all magazines that they have no further use for, to be forwarded with the compliments of the association to the various camps of the Mt. Shasta Power Corporation.

Supper and dancing concluded the evening's entertainment. Next day our baseball team went to Orland and there handsomely defeated the Bell Club of the Pacific Telephone and Telegraph Company.

In a communication to chairman McCann of the Program Committee, chairman Hugh T. Flynn of Drum section expresses great appreciation of the annual dinner in the evidence it displayed of general good will. In this he writes:

"Mr Britton's tribute to the ladies of the organization struck responsive chords in our breasts. I wish Mr. Britton might know to what heights those ladies of our section who were fortunate enough to be present were borne by his tribute to them."

OUR ANNUAL TENNIS TOURNAMENT

The annual P. S. E. A. tennis tournament to determine the champion racket wielder of the Company for 1921, is scheduled to take place Saturday after-

noon and Sunday, August 20th and 21st, on the Hotel Rafael Courts in San Rafael.

The Hotel Rafael courts are two in number, new, fast, ideally located, and will be reserved for the exclusive use of the tournament on these two days. Arrangements have been made for special rates at the hotel whereby two in a room will be accommodated at prices varying from \$1.25 to \$2.00 each, depending on the room. Meals will be served by the hotel, both "a la carte" and "table d'hote."

All are welcome, the more spectators the better. Bring your sweethearts and wives, and make this event a real week end party which will be remembered.

The tournament will be a handicap, and inexperience need be no bar. Balls will be furnished free and all the equipment a contestant needs is a racket, a pair of shoes and a rugged constitution. Prospective competitors who are slightly overweight or not in the best of condition are earnestly urged to commence strenuous training at once as the sun is warm in San Rafael and every surplus pound will weigh a ton before your match is finished.

As usual there will be an abundance of prizes, pictures and refreshments.

The historic "handsome silver loving cup," which has been in competition since 1911 is still waiting for some lucky man to win it a third time. Dodge, Steele and Monroe each have two wins; Jones, Parr and Benson, one each; Benson being the winner last year. All these players, with the exception of Jones and Parr who are no longer with the company, will play this year. On present form it is impossible to forecast the probable winner, particularly after the handicap committee has finished its work.

The entry list will close Monday, August 15th, and play will commence at 1:30 P. M. Saturday, August 20th. Contestants will be notified of the hour set for their first match. Entries should be sent or phoned in to R. A. Monroe, 445 Sutter street, and the hotel accommodations required should also be stated. Any contestants who have not played in a previous company tournament should also furnish such information as club rating, tournament victories, or relative tennis ability, to aid the tournament committee in assigning a suitable handicap.

R. A. MONROE.

A Splendid Display of Presence of Mind

By P. M. DOWNING.



Harold Anderson.

It is always a source of gratification to know that employees heed and profit by the instructions given them. This is particularly true where human life is

involved. A very noteworthy instance of the good that can come from being familiar with the rules for resuscitation in case of shock occurred a short time ago.

George A. Cunningham and Harold Anderson were working together on a pole in the town of Livermore, when the former thoughtlessly leaned back and came in contact with a 2300 volt line, receiving a shock which rendered him unconscious. He was prevented from falling to the ground by his safety belt. Anderson climbed around the pole and by sitting on a crossarm was able to apply artificial respiration until, within a short time, Cunningham was fully recovered.

The remarkably cool judgment and presence of mind displayed by Anderson saved a fellow workman's life. This incident shows the importance of being familiar with first aid methods.

Financial Side of "Pacific Service"

The following approximate Income Account Statement for the month of June, 1921, compared with the same month last year, shows an increase in gross earnings of \$473,072.56, in net income of \$332,122.25, and in surplus available for dividends of \$218,446.21.

MONTH OF JUNE

	1921	1920	INCREASE
Gross Earnings, including Miscellaneous Income.....	\$3,227,063.86	\$2,753,991.30	\$473,072.56
Maintenance.....	285,501.15	218,521.43	66,979.72
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts..	1,690,605.51	1,616,634.92	73,970.59
Total Expenses.....	\$1,976,106.66	\$1,835,156.35	\$140,950.31
Net Income.....	1,250,957.20	918,834.95	332,122.25
Bond and Other Interest.....	482,312.47	423,910.78	58,401.69
Balance.....	\$ 768,644.73	\$ 494,924.17	\$273,720.56
Bond Discount and Expense.....	33,253.63	29,201.14	4,052.49
Balance.....	\$ 735,391.10	\$ 465,723.03	\$269,668.07
Reserve for Depreciation.....	283,333.33	232,111.47	51,221.86
Surplus.....	\$ 452,057.77	\$ 233,611.56	\$218,446.21
Dividends Accrued on Preferred Stock....	181,360.04	150,266.44	31,093.60
Balance.....	\$ 270,697.73	\$ 83,345.12	\$187,352.61

In the six months' period, gross earnings increased by \$2,993,060.23 net income by \$1,458,401.95, and surplus by \$597,354.88, as shown by the following statement:

SIX MONTHS ENDED JUNE 30TH

	1921	1920	INCREASE
Gross Earnings, including Miscellaneous Income.....	\$19,367,796.47	\$16,374,736.24	\$2,993,060.23
Maintenance.....	1,693,202.65	1,204,223.74	488,978.91
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts....	\$10,414,963.46	9,369,284.09	1,045,679.37
Total Expenses.....	\$12,108,166.11	\$10,573,507.83	\$1,534,658.28
Net Income.....	7,259,630.36	5,801,228.41	1,458,401.95
Bond and Other Interest.....	2,850,341.86	2,364,496.39	485,845.47
Balance.....	\$ 4,409,288.50	\$ 3,436,732.02	\$ 972,556.48
Bond Discount and Expense.....	192,599.23	126,219.74	66,379.49
Balance.....	\$ 4,216,689.27	\$ 3,310,512.28	\$ 906,176.99
Reserve for Depreciation.....	1,700,000.00	1,391,177.89	308,822.11
Surplus.....	\$ 2,516,689.27	\$ 1,919,334.39	\$ 597,354.88
Dividends Accrued on Preferred Stock....	1,061,192.08	897,714.76	163,477.32
Balance.....	\$ 1,455,497.19	\$ 1,021,619.63	\$ 433,877.56
Dividends Accrued on Common Stock.....	850,101.45	850,101.45	.....
Balance.....	\$ 605,395.74	\$ 171,518.18	\$ 433,877.56

The above statements indicate a very healthy growth of business, in spite of more or less depression existing during the past few months in many lines of industrial activity. The Company's current financial condition is also satisfactory, cash on hand at the close of June amounting to \$7,657,021.14, in addition to which there were held in the treasury \$580,700 par value of bonds of underlying companies purchased in advance for sinking fund requirements.

The outlook for net during the remainder of the year is distinctly encouraging owing to anticipated lower operating costs by reason of better water conditions, which will result in a substantial reduction in the quantity of oil used by steam stations, and also because of lower oil prices.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF
THE PACIFIC GAS AND ELECTRIC COMPANY

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*The Pacific Gas and Electric Company desires
to serve its patrons in the best possible manner.
Any consumer not satisfied with his service
will confer a favor upon the management by
taking the matter up with the district office.*

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No. 2

EDITORIAL

The city of Los Angeles is once more in the political limelight, this time by reason of a plan by which she proposes to reach out for all available power sites, without regard to territorial boundaries, within possible transmission range of the municipality. Her plan, of course, has given fresh impetus to the oft debated question of public vs. private ownership, and in this connection it is interesting to note that even that portion of the California press which is ranged upon the side of public ownership is not by any means unanimous in allowing our fair southern sister to have all her own way in the matter. In other words, there is a growing feeling that no municipality, no development scheme, however meritorious, undertaken under municipal direction, shall be considered superior to private enterprise in the matter of supervision and regulation.

Some interesting editorials upon this subject have already engaged public attention. One that treated the subject at considerable length and with commendable clarity of analysis appeared in *The Fresno Republican* recently. In this it was observed:

"In our discussions of the relation of the city of Los Angeles to the rest of the State, considering the electric power question, it should be understood thoroughly that the question of public owner-

ship has virtually nothing to do with the case. While it happens that Los Angeles is getting its control over vast amounts of power, both developed and potential, through a municipally owned system, it should be seen that this development, though clothed as a municipal corporation, is not a menace to the rest of the State as a city system but as a sales system. Its great advantage is not given to it because it is municipally "owned," but because it happens, through the accident of our constitutional tax system, to be free from State taxes, while the rest of the State must pay State taxes on its power. And further, the municipal enterprise of the people of Los Angeles has enabled them to get peculiar advantages from Congress under the cloak of municipal enterprise but not for municipal purposes.

"The rest of the State is being injured by the Los Angeles system, whether the rest of the State should finally adopt the government owned system or the private owned system, or be divided between them. True, by a resort to government ownership, Fresno or Sacramento or San Francisco might theoretically gain the advantage of tax exemption. But, in the meantime, Los Angeles would have had a running start in developing its water power, would have used this capital advantage to levy claims on all the rest of the free water opportunities in sight, and as a "running institution" would have outsmarted the rest of the State before we got started.

"Los Angeles should not be denied the credit of initiative in fields where initiative has free play. But she should be denied the advantage of unfair distribution of State favoritism."

The editorial went on to discuss the public ownership movement, its origin, growth and present status. Concerning this it said:

"The pressure from the public for municipal ownership of utilities has almost disappeared, because the pressing need for it has gone. We have something else in its stead. Most people think that we have a very good substitute, perhaps something better rather than something just as good. We have State regulation.

"State regulation has wiped away much of the urge for municipal ownership. Not all, perhaps. State regulation is still in its infancy. It has not been properly or thoroughly worked out. The machinery for State operation may still halt, at times. But it is working. It is requiring utility corporations to give more

equitable service than they have ever given before. *And the spirit within the corporations themselves is much higher and better, and tends to more efficient service.* The enormous profits which it was once popularly supposed were made out of utility charges are now absolutely prevented. The return to the owner is limited. The return to the promoter and to the manager is supervised. The return to the consumer that might have been made through public ownership, by means of decreased charge, is actually being made to him through State regulation of charges."

The editorial closed with a few very direct words upon the municipal system of the southern city.

"Los Angeles' municipally owned power system is a parasite upon the State. It uses the general theory of tax exemption of cities to have cheaper power for sale outside the city. It uses the power of eminent domain to deprive citizens of other parts of the State of their power to buy competing power. It uses its great influence as a city to get preferential treatment in Congress.

"Los Angeles should submit to State regulation, or it should be required to submit to State regulation."

During the last 12 years California has doubled its hydro-electric power until the state has now 1,107,774 installed

horsepower in 130 plants, public service, municipal and mining, according to the first survey of California's water power made since 1908, completed by Mr. H. D. McGlashan, district engineer of the water resources branch of the United States Geological Survey.

When the 1908 survey was made New York State had nearly twice the hydro-electric power of California, most of it developed at Niagara Falls. New York then led the country in water power, with California second. Mr. McGlashan believes that California is now, perhaps, edging New York out of first place.

His latest figures do not include any power plants developing under 100 horsepower. The 1908 report included all power plants, and at that time there were many mines which had their own electric plants that are now shut down or using current from a public service corporation.

Concerning the foregoing, it is interesting to note that a list of twenty-five of the largest power companies in the country as compiled by *The Electrical World* shows "Pacific Service" to be the third largest in the United States, exceeded only by the Niagara Falls Power Company and the Commonwealth Edison Company of Chicago. The list might be worth perusal:

NAME	Kilowatt Hours	Peak Load
	Total Output	Kilowatts
1. Niagara Falls Power Co.....	2,328,326,064	303,640
2. Commonwealth Edison Co.....	1,883,570,000	478,820
3. Pacific Gas & Electric Co. of Cal.....	1,475,678,673	259,004
4. New York Edison Co. & United Electric Light & Power Co.....	1,383,070,086	398,535
5. Montana Power Co.....	1,103,620,644	159,700
6. Southern Ga. Edison Co. of Cal.....	1,079,474,091	213,450
7. Detroit Edison Co.....	1,002,306,000	218,800
8. Public Service Electric Co. of New Jersey.....	912,899,972	216,452
9. Philadelphia Electric Co.....	910,327,693	203,624
10. Duquesne Light Co.....	810,401,406	162,000
11. Southern Power Co.....	745,873,992	210,000
12. Cleveland Electric Illuminating Co.....	682,557,097	155,041
13. Mississippi River Power Co.....	644,163,000	115,650
14. Buffalo General Electric Co.....	544,293,410	108,500
15. Utah Power & Light Co.....	519,854,000	85,404
16. Pennsylvania Water & Power Co.....	494,624,400	85,000
17. Niagara, Lockport and Ontario Power Co.....	492,466,460	88,000
18. Alabama Power Co.....	488,089,061	97,900
19. Consumers Power Co.....	476,095,098	106,924
20. Puget Sound Power & Light Co.....	472,765,800	95,725
21. North American Co.....	471,611,047	105,749
22. New England Power Co.....	430,918,000	103,450
23. Consolidated Gas, Electric Light and Power Co. of Baltimore.....	429,710,847	88,990
24. Tennessee Power Co.....	428,649,835	74,800
25. Pennsylvania Power & Light Co.....	411,639,501	87,685

Tidings From Territorial Divisions

East Bay Division

The Oakland Title Insurance and Guaranty Company will soon begin the erection of a new office building at the S.W. Cor. 15th and Franklin. It will occupy 84 feet on Franklin and 50 feet on 15th, and will cost \$230,000. The new home will be four story and will be occupied by the first of the year.

Mr. Ira Abraham, the manager, has built up the business until it has outgrown its present quarters. Franklin street is a promising business thoroughfare.

The Earl C. Anthony Company has moved its Packard agency to the splendid new building at the corner of 21st and Webster street. The Chevrolet, the Packard and the Dodge are now grouped in three of the finest buildings in the automobile section of Oakland.

Carrier pigeons, flying at 100 miles an hour, are carrying the message of naval preparedness up and down the Pacific Coast.

Through the Naval Base Committee of the Oakland Chamber of Commerce arrangements have been made with the Sperry Flour Company to use homers in delivering invitations to all cities on the coast to join the Pacific Coast Defense League. These homers are sent out frequently by the flour company to carry official messages from the main offices to branches and the company readily consented to permit its birds to be used for the naval preparedness campaign.

The Trade Extension Committee of the Oakland Chamber of Commerce ran a special train to Livermore July 2nd, to participate in the Livermore rodeo. A stop was made at Niles and a procession was made down the principal street preceded by a Highland bag pipe band. The Livermore merchants made a big undertaking when they underwrote a \$12,000 rodeo. The three day affair amply covered the expenses. It was a dazzling show that promises to be an annual event. Horsemen from all parts of the country signed up, and the wild steers and bulls, afforded alluring excitement.

Haywards is fast encroaching on Petaluma as an egg center. Here is the latest achievement:

A seven months' old White Leghorn pullet, owned by the Moores, laid an egg $7\frac{1}{2} \times 5\frac{7}{8}$ inches in circumference.

E. B. D.

The following remarkable communication might be made the subject of a story, entitled "How a Lost Consumer Became Her Own Collector." We print it in grateful appreciation of the writer's evident good will:

June 2nd, 1921.

Collection Department,
Berkeley Electric Lighting Co.

In examining some old papers recently, discovered this old unpaid bill,—am sending you check to cover same with interest at 4% for 10 years.

The previous bills up to Nov. 1910, I have in my possession, receipted by Earle, who was evidently a collector at that time.

With regrets that I should be so tardy about this,—

Very respectfully,

SIGNED

Alice M. Strang,
Hotel Los Medanos, Pittsburg, Cal.

Here is another worthwhile communication, from a prominent physician of Oakland:

"Allow me to thank the service department for the prompt and courteous service rendered me in the matter of having the gas connections in my new home—It has certainly been appreciated.

Very truly,
J. W. Scamell."

Here is another worthy of attention:
Oakland Daily Post:

July 7th, 1921.

The Pacific Gas and Electric Co.,
13th and Clay Sts.,
Oakland, California.

Attention: Mr. Newbert,
Gentlemen:

I want to call your attention to the work of H. E. Champion and H. C. Moyer, Pacific Gas and Electric Company employees, who assisted us on July 3rd in getting our plant back to working order

after our fire. These men rendered us invaluable assistance in getting our power restored. You know that the Post issued its regular editions the day after the fire and a great deal of this credit is due to the work of your two men.

Will you please extend to them our sincere thanks

Very truly yours,

THE OAKLAND DAILY POST,
Woodson Ross.

Sacramento Division

So many important things are happening here that one hardly knows where to begin or when to stop. The first thing that interests us is the building boom. Commercial and residential buildings, school houses—and no little country school houses either, from the \$300,000 high school down to the insignificant \$100,000 grammar school. Hundreds of residences from \$10,000 up built in districts where the restrictions are real restrictions, no house to cost less than \$10,000. The building must be at least 25 feet from the sidewalk and on a line with its neighbor. The streets are 80 feet wide and the sidewalks 12 feet wide. This makes wonderful streets, and as every property owner is vying with his neighbor to get something more beautiful and novel the results are simply wonderful.

Our filtration plan is rapidly assuming proportions and to the uninitiated is a startler. The ground occupied and the complexity of the plans are all stupendous. In about one year more Sacramento will have eradicated its greatest drawback and will have a water supply of volume and quality that will equal anything in the country. Incidentally, we are supplying the power for construction and will also supply the power for the numerous pumps necessary to operate the plant.

The demand for new installation of street mains and house service is simply swamping our Gas Distribution Department. The fully established fact that gas is the cheapest fuel on the market at the present time is one leading factor. The adaptability and cleanliness of gas as a fuel when used with modern water and air heating appliances is well told to this community. In short, business is good.

We are sometimes recipients of complaints, although we know that we should receive volumes full of commendation. When we do receive them we like to see them in print, so witness the following:

Sacramento, July 9, 1921.

Pacific Gas and Electric Co.,
Sacramento, Calif.

Gentlemen:

I wish to take these means of thanking you for the efficient and prompt service your organization rendered us.

When we started business we had a Monitor coffee roasting machine with a capacity of 350 lbs., and we could not get a good roast. We phoned your complaint department and your representative called and found the gas supply not sufficient.

Since you installed your new pipe line and adjusted our roaster we have no more trouble and can roast 350 pounds every 10 minutes. We are installing another machine and feel our troubles are over.

Yours very truly,

Standard Coffee & Tea Co.
(Signed) N. Pementelaere.

English as she is spoken with a Japanese accent. The following sign was on a garage door:

"Natise"

"This garage do not responsible on the fire and on the thief."

"Nada Bros"

For what reason or how it could occur, we were very much startled to receive the information the other day that:

"Our gas meter is escaping sufficient to say that we succeeded in capturing the fleeing appliance and placed it in durable vile."

There are many changes in the personnel of our office. Mr. Dashiell of the Collection Department resigns to take up business in San Mateo County. He will be succeeded by Mr. Clayter, formerly of San Jose District. We are very sorry to lose Mr. Dashiell who has endeared himself to all of us very much by his genial personality and his efficient methods in handling his difficult office. We wish him success in his new venture. He has been with the company about 17 years. We welcome Mr. Clayter to our midst and wish him all possible success in the new place. We bespeak sincere co-operation without which no success is possible.

We announce with regret that W. Hank Smith, after twenty-three years faithful efficient service with our company has resigned to take up work with another line of business which promises more remuneration for his services. Hank, we are going to miss your pleasing personality and affable ways. Allow us to wish you every possible success in your new venture.

We announce with sorrow the demise of Mr. Wellington Baker, of the car shops, after a faithful service of 28 years. At 63 years of age he has been called home. A married man whose two sons served with credit during the great war. May he rest in peace!

The first application of electricity for pumping city water was made this week when we hooked up a 600 H. P. unit in the city water works. The previous installations have all been steam. It is the plan to use nothing but electric power in the new plant; the installation will run into thousands of horsepower.

THE CAPTAIN.

West Side and Shasta Divisions

Trinity County is to have two new gold dredgers and will be furnished with power by "Pacific Service" to the amount of approximately 500 H. P. Both will be located a few miles from one another near Lewiston. The first will be a large one placed on the famous Paulsen ranch and operated by Laurence Gardella, who now operates two dredgers on Clear Creek, near Redding, also supplied by "Pacific Service." The log of the prospect holes is said to reveal gold amounting to \$1,500,000 covering 300 acres. The construction of the dredger is well on its way.

The second will be a small dredger and is also under course of construction. It will be operated by Los Angeles parties. It will be located about two miles above the company's leased Trinity power house.

Another epoch to be written in the electrical history of California. Another body of water harnessed to give its energy to work in unity with the already harnessed waters, to help make a better and greater California, which assures a

better and greater "Pacific Service." Hat Creek Plant No. 1 is completed, all is in readiness to turn on the water to the turbine. The transmission line to Cottonwood is all that holds up its immediate delivery of 10,000 H. P. into the Company's vast system. The lines' completion is expected about the middle of August, the wire it now being rapidly strung. The building of Cottonwood substation will soon take form and its completion will be about the same time as that of the line.

On July 2nd a disastrous fire fanned by a strong north wind ravaged thousands of acres of grain fields and pastures from as far north as South Power House to Colusa, and, as was learned, still further south. High tension and distribution lines were greatly affected, it was a hard day for those in the electrical maintenance department.

Fall River Mills had one grand celebration on the 2nd, 3rd, and 4th of July. The P. G. & E. boys from the Hat Creek and Pit River camps participated, attending in large numbers, furthermore they competed in two games of baseball, defeating the Montgomery Creek team 17 to 3 on the first day, and on the Fourth, defeated the local American Legion team 15 to 8. There was a parade with numerous floats with prizes for the best, and not satisfied with laurels already won they won the \$10 prize for the best decorated car.

B. W. G.

Colgate Division

Reconstruction of that portion of Marysville which was devastated by fire on July 2nd has been demanding the attention of the entire city ever since and it now appears that property owners have the matter well enough in hand to warrant the statement that approximately seventy-five per cent of the damaged property will be rebuilt to modern homes, or apartment houses.

Never before in the history of Marysville was a fire so sweeping. An area of twelve blocks was leveled in some cases leaving barely sufficient debris by which to identify the location.

When new homes are built it is believed an effort will be made to build them of fire resisting materials to insure against a repetition of the disaster.

World wanderer, eye-witness to international affairs, and newspaperman of almost universal reputation, Guy Moyston, member of the Associated Press staff in London, looks forward to a day when he will toast his shins before the fireplace in a little bungalow situated in a Colusa County almond orchard.

Moyston has determined to retire temporarily from the maelstrom of international affairs and has purchased an almond orchard of 40 acres which he will cultivate with his own hands. Moyston's place is located near Arbuckle.

Figures compiled by the treasurer of Colusa County recently show that the assessed valuation of property this year will be less than the 1920 values. Consequently, Colusa's tax revenue will be somewhat curtailed or the tax rate must be increased. Last year the assessed valuation of property within the county was \$22,859,210. This year the figure is \$21,168,128. Based on the present tax rate the difference between the revenue of 1920 and this year will be \$37,000, it is estimated.

Workmen excavating for a gas pipe line in Oroville recently were surprised when picks and shovels suddenly broke through the trench revealing a deep chasm. Investigation proved this to be a tunnel, presumably that of an ancient mine. It is now many years since any tunnel mining was done in the vicinity of Oroville, but pioneer residents declare they are certain the subterranean passage has an outlet somewhere in the Hewitt claim, near the city.

As part of a campaign to reduce expenses in Butte County, the supervisors are planning to dispense with the services of an assistant county agent, or "farm advisor," as the officer was formerly known. It is also planned to cut the annual appropriation for farm bureau work to \$2,000. Farm centers throughout the county have gone on record as favoring the step which is in contrast to the course taken by most counties during the past two years.

Almond growers of Sutter County, representing a considerable acreage of almond trees have united with growers in other portions of the state in an effort to induce congress to favor the domestic trade with a protective tariff. The growers maintain that they cannot successfully compete with the European

product unless such a tariff is made. Sutter County almond raisers have held several meetings recently and passed resolutions urging the adoption of the tariff, copies of which have been forwarded to legislators representing this section.

Fresno Division

Fresno, located as it is within the "garden of the sun," has been treated to its full portion of hot weather, a great feature in ripening the fruit of the valley and adding to the popularity of the P. S. E. A. swimming parties. Our most noteworthy social affair was a dancing party held on the evening of July 1, at the Winter Garden, at which, the local association held open house for members and friends. A good number of the employees attended and dancing and cards were the two features of the evening. The Winter Garden was an ideal spot for this affair owing to the fact that it is surrounded by a beautiful lawn and the open air features of the dancing floor make dancing, even on a summer night, very enjoyable.

Among the newer industries which have sprung up in our midst is the Fresno Tire & Rubber Company, financed and managed by local men. A modern, fire-proof, two-story structure is to be erected in the near future at a cost of some \$200,000. The plant is to be located on Tehama street, near Belmont, and in the immediate vicinity of our Gas Works. This modern plant will employ approximately 400 persons and will be devoted exclusively to the manufacture of cord tires. A capacity of 500 casings and 1500 tubes a day will be the estimated output. There is every reason to believe that an industry of this kind will make a decided success, especially in a community that boasts the largest number of automobiles, per capita of any city of its size in the land.

California Peach & Fig Growers Association, on June 23, announced the shipment of the first carload of fresh black Mission figs ever shipped to the Eastern markets. The car was expressed over the Santa Fe route and reached the green fruit markets of Chicago and New York in excellent shape. The success of this experiment opens an avenue of consumption for a large portion of the California fresh fig crop. Fresh figs are almost unknown in the East at the pre-

sent time, and from the satisfactory reports there will be a growing demand. This fruit, in the past, has been known to the East chiefly in its dry state. Among the notables who received complimentary boxes of figs was President Harding.

That Fresno may have ample gas pressure this coming year, some three miles of 8-inch high pressure transmission line is being constructed which will encircle the city, giving ample gas supply to certain fast growing sections which during the past winter afforded somewhat of a problem to keep amply supplied at the peak load. Over eight miles of four inch and four and one-half inch distributing lines are being laid which will further the good work of passing the gas around, and, that the gas may have a flying start at the plant, a 300 H. P. electrically-driven compressor is to be installed. An additional 160 H. P. gas engine will be used as motive power to drive a large booster at intervals which will put the gas under high pressure for the 8-inch lines. With this equipment we feel certain the coming heating season will find us amply prepared to give the best possible service to all the consumers of the Pacific Gas and Electric Company in Fresno.

We have recently organized in our midst a commercial baseball league composed of teams made up of employees of the various business concerns of the city. It is gratifying to learn that the Gas Company's representation is making a very creditable showing. At the present writing we are giving the three leading teams a run for their money.

E. W. KIMMELL.

San Francisco Division

The following is offered as an exemplification of "Pacific Service" in the western metropolis:

PACIFIC BOXBOARD CO.

San Francisco, Cal.,

June 20, 1921.

Pacific Gas and Electric Company,
445 Sutter Street,
San Francisco, Calif.
Gentlemen:

I wish to express my appreciation of the prompt and efficient manner in which your Service Department connected up the power supply to our well testing outfit in the Bay View District last week.

The work required the setting of 5 poles, installation of three transformers and the stringing of the necessary wires, all of which was done in record time.

Many thanks to Mr. A. J. Theis and his efficient assistants.

Very truly yours,

PACIFIC BOXBOARD CO.

W. W. Hanscom,

Consulting Engineer.

GAS GENERATION DEPARTMENT

At Potrero Station ground is now being broken for the foundations for the new medium high centrifugal compressor and the high pressure duplex compressor. It is expected that this apparatus will leave the East sometime in October, and will be in operation early in December, adding nearly 2,000,000 cubic feet per hour to the present boosting capacity.

Superintendent McCarthy is enjoying his vacation somewhere along the Russian River and J. A. Johnson is camping along the Feather River with his family. Master Mechanic, Frank Lyttle, just returned from a delightful camping trip among the lakes of the Sierra Nevada mountains.

J. W. DICKEY.

North Bay Division

IN MEMORIAM

Word has just been received from Tarentum, Pa., that Frank Taylor Gash died in that town on May 23rd.

Mr. Gash was an employee of "Pacific Service" in Cordelia before the war and left its employ to go overseas in the service. He was first lieutenant in the 26th Engineers and was gassed in the struggle which took place in the Argonne woods. Returning to the United States he took up his residence in Pennsylvania in which State he remained till the time of his death.

Besides parents, a sister and brother, he is survived by his widow and two small children.

While a member of "Pacific Service," Mr. Gash made many friends in Cordelia who will learn of his untimely end with deep regret.

New Size Service Badges



The Employees Welfare Committee of the Company has been considering the issuance of service badges of a size more suitable than the present badge for wearing on the lapel of the coat, and has finally adopted a new badge of the same design as the present one, but one-quarter of an inch smaller in diameter, the actual size of which is shown in the above cut. A sample of this new badge, made of silver, enameled in blue, and of very fine workmanship, has been received. It is a handsome emblem and one that will be a credit to "Pacific Service."

The same arrangement of additional designations (stars or diamonds) for each five-year period of service will be used, as has been the practice with the old form of badge. The new badge is made to fasten into the button-hole with a screw fastener, but pin fasteners will be furnished on the badges for ladies.

At the beginning of next year this new kind of badge will be issued to all employees who have rounded out ten years of service with the Company, also to holders of the old badges whose years of service as of Jan. 1, 1922, entitle them to receive the next higher designation. This plan will be followed at the first of each year, and ultimately all of those who now hold the old badges will receive one of the new kind.

A supply of these new badges will shortly be available, however, for distribution to employees now in possession of the old badges but who desire to obtain the new kind without waiting for the time when they will be entitled to receive the next higher designation. These badges will be on sale at the following prices:

Years of Service Indicated	Each
10 to 14 years, inc.	\$ 1.50
15 " 19 " "	1.50
20 " 24 " "	5.25
25 " 29 " "	5.25
30 " 34 " "	9.00
35 " 39 " "	9.00
40 years or more	12.75

Remittances should be made payable to Pacific Gas and Electric Company, and forwarded to the Vice President and General Manager's office.

It is interesting to note that there are now outstanding a total of 817 service badges, classified as follows:

	Years of Service Indicated
420.....	10 to 14 inc.
207.....	15 " 19 "
80.....	20 " 24 "
53.....	25 " 29 "
34.....	30 " 34 "
15.....	35 " 39 "
8.....	40 and over

These are distributed among the various divisions, as follows:

	Total of All Classes
Head Office	84
Colgate	17
De Sabla	22
Drum	31
East Bay	140
North Bay	18
Sacramento Supply	17
Sacramento	116
San Francisco	252
San Francisco Supply.....	9
San Joaquin.....	45
San Jose	40
Shasta	15
West Side	11

817





Running Trains

WITH RUNNING WATER

Modern transportation depends upon a continuous supply of cheap motive power. Economically, hydro-electricity as a power is replacing fuels in California and we may fairly anticipate electrification of our entire transportation system.

To investors in California hydro-electric companies this will mean material strengthening of their investments, because a vast new market becomes available. Hydro-electric production is a fundamentally essential business.

Send today for "California Hydro-Eléctric Securities" and "Investment Opportunities of Today" — two books every investor should have.

BLYTH, WITTER & Co.

Merchants Exchange

San Francisco

Seattle

Portland

Los Angeles

New York



When writing please mention PACIFIC SERVICE MAGAZINE

One of the first requisites of a modern home is that it contain ample facilities for an ever increasing use of electric service



How convenience receptacles aid artistic arrangement

AN intelligent use of G-E "Standard" Twin Receptacles not only doubles convenience, but permits of the artistic and sensible arrangement of furniture in any room. This baseboard outlet takes up no more space than a single receptacle, but contains two places to "plug in." For living room, dining room, bedroom, hall—in fact for every room in the house, the G-E "Standard" Twin Receptacle will more than repay its slight cost in added convenience.

Such convenience is easy to obtain. If you're building, see that your wiring includes G-E "Standard" Twin Receptacles.

If you are already settled in a home, ask the electrical contractor-dealer in your community to install them to replace your present single receptacles. It's an easy job with no muss or litter, and you will at once appreciate the improvement.

And when you have any other wiring done, be sure that your electrical contractor uses G-E Reliable Wiring Devices—there are 3000 of them to meet every wiring requirement.

Ask our distributor for our interesting booklets on house wiring, illustrating and describing G-E Wiring Devices.

WHEN you buy electrical goods, look for a store that displays the G-E orange and blue labelled line of electrical conveniences—this label is an indication of quality.



Pacific Coast Distributor

PACIFIC STATES ELECTRIC COMPANY

Los Angeles Oakland Portland San Francisco Seattle Spokane

General Electric Company

General Office
Schenectady, N.Y.

Sales Offices in
all large cities 41-130

Pacific Coast Sales Offices in: Los Angeles, Portland, San Francisco, Seattle, Spokane, Tacoma
Rocky Mountain Sales Offices in: Denver, Colorado; Salt Lake City, Utah

When writing, please mention PACIFIC SERVICE MAGAZINE

J. W. KERR, President

Established 1860

C. D. STEIGER, Secretary

Steiger & Kerr Stove and Foundry Co.

OCCIDENTAL FOUNDRY

Successors to Steiger & Kerr

General Foundry Dept.

Machinery, Railroad, Architectural Castings, Bell and
Spigot Castings for Gas and Water Mains, Flange Fittings
for all Standard Electroliers, Gasoliers and Lamp Posts

Stove Foundry Dept.

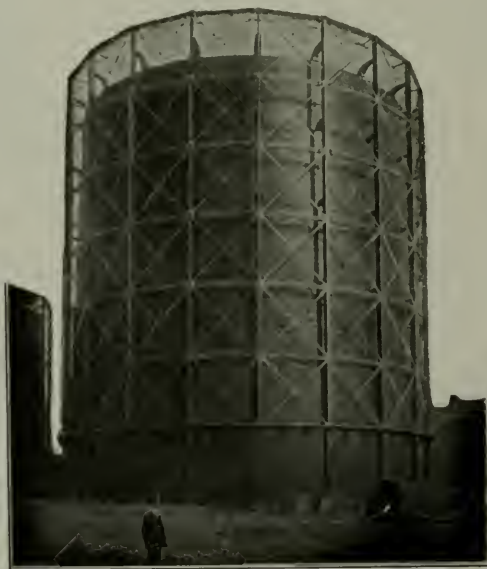
Cast Iron Cooking and Heating
Stoves for Wood or Coal.

Steel Range Dept.

Steel Ranges. Gas Ranges.
For House, Hotel and Apartments.

Corner Folsom and Eighteenth Streets, San Francisco

TELEPHONE MISSION 250



R. D. Wood & Co.

PHILADELPHIA, PA.

Gas Holders
Water and Gas Works
Appliances
Cast Iron Pipe
Pumping Engines
Centrifugal Pumps
Hydraulic Machinery
Hydrants, Valves, etc.



ALLIS-CHALMERS MANUFACTURING CO.

MILWAUKEE, WISC.

District Office: Rialto Bldg, San Francisco, Calif.

Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

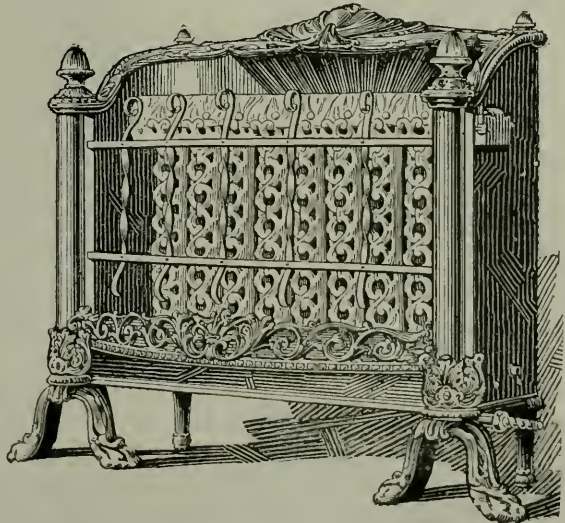
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California



PELTON

Impluse and Reaction Turbines

Built in unit sizes of from $\frac{1}{4}$ HP to 25,000 HP.
To operate under heads of from 20 feet to 2,500 feet

WRITE FOR BULLETIN No. 12

THE PELTON WATER WHEEL COMPANY
2217 Harrison Street, San Francisco, Cal.

WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

**RIVETED STEEL PIPE, STAND PIPES, PENSTOCKS OR ANY SPECIAL
PLATE CONSTRUCTION**

ELEVATED STEEL TANKS—OIL OR PRESSURE TANKS

WATER WELL CASING—SURFACE IRRIGATION PIPE

GALVANIZED CORRUGATED CULVERTS—GUARANTEED

STEEL WIRE FENCE WITH SELF-ANCHORING STEEL POST

SAN FRANCISCO, 444 Market Street † LOS ANGELES, 1758 North Broadway

SPRAGUE CAST IRON GAS METERS

Create Economy All Along the Line

**IN FIRST COST • ADJUSTING • REPAIRS • UPKEEP
USED BY 90 PER CENT OF ALL CALIFORNIA GAS COMPANIES**

431 Sutter Street
SAN FRANCISCO

116 South Anderson St.
LOS ANGELES

GAS METERS

**"B" Tin "B" Ironcase Orifice
Complaint Test Station**

CALORIMETERS

PROVERS

Pacific Meter Works of American Meter Company
SAN FRANCISCO, 20th & Folsom Streets LOS ANGELES, Title Insurance Building



STANDARD Products

Bare Copper Wire
 Brass and Bronze Wire
 Colonial Copper Clad Steel Wire
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 Varnished Cambric Cables
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Write our nearest office concerning your requirements

Standard Underground Cable Company

Pacific Coast Department
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Los Angeles Seattle Salt Lake City

Factories:
 Oakland, Cal. Pittsburgh, Pa. Perth Amboy, N. J.



The Fulton Gas Pressure Governors For Artificial or Natural Gas

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

Chaplin-Fulton Manufacturing Co.
 PITTSBURGH, PA.

336 BK Nickel Trimmed with Warming Oven



A Combination Gas Range

THAT PERMITS OF EVERY
 SELLING ARGUMENT

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

Jas. Graham Mfg. Co.

531 Mission Street, SAN FRANCISCO



Wedgewood
 QUALITY SERVICE FUEL ECONOMY

Gas
 Ranges
 and
 Appli-
 ances

When writing please mention PACIFIC SERVICE MAGAZINE

The wide-spread use of central-station rates, involving a maximum demand charge, brings with it the necessity for a meter for determining the maximum demand, which is accurate, relatively inexpensive, easy to read, and whose registration conforms as closely as possible to the temperature rise in the transformers and generators which supply the power. These requirements are most closely met with—

Type RH Thermal Demand Meters

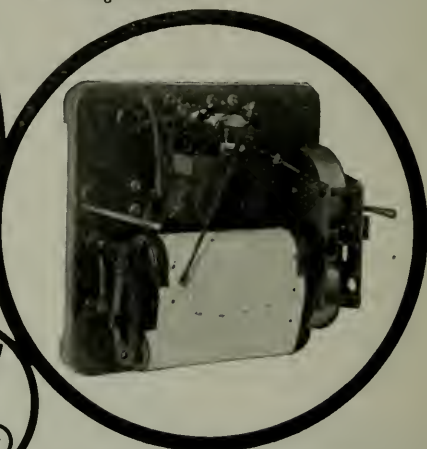


Polyphase Indicating Wattmeter

They operate by heat storage from an electrical heating element, with an indicating or recording element involving a heat-sensitive bi-metallic spring system.



They are supplied as single or polyphase indicating or recording wattmeters, or as alternating or direct-current indicating or recording ammeters.



Recording Wattmeter, cover removed

The simplicity and freedom from mechanical complexities make *Type RH Thermal Demand Meters* especially valuable on rapidly fluctuating loads.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURG, PA. . . . SAN FRANCISCO OFFICE: 1 MONTGOMERY STREET

Westinghouse

The Pacific Telephone and Telegraph Company

GOOD SERVICE AT FAIR RATES



American National Bank

of San Francisco

*Invites you to use its fully
equipped banking service*

A Willing, generous service, cheerful in spirit—helpful by strength and conservative when necessary to maintain that strength.

It Is our purpose to render a service that will demonstrate our sincere interest in the financial welfare of our customers and other friends.

*Four Per Cent interest allowed in
TIME DEPOSIT DEPARTMENT*

Safe Deposit Department open on business days
from 8 a. m. to 6 p. m.

Corner

California and Montgomery Sts.



Pacific Gas and Electric Company Furnishes

"PACIFIC SERVICE"

TO OVER 578,000 CONSUMERS OF

GAS • ELECTRICITY • WATER • STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

	DIRECTLY		INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity	171	1,120,503	60	153,449	231	1,273,952
Gas	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic)	18	61,719	8	15,488	26	77,207
Railway	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
¹ Alameda.....	28,806	¹ El Verano.....	400	¹ Meridian.....	200	¹ San Leandro....	5,703
¹ Albany.....	2,462	¹ Emeryville.....	2,373	² Millbrae.....	300	² San Lorenzo....	500
¹ Alvarado.....	1,000	¹ Escalon.....	600	¹ Mills.....	400	² San Martin....	250
¹ Alviso.....	517	¹ Esparto.....	200	¹ Mill Valley....	2,554	² San Mateo....	5,979
^{1,2} Amador City..	377	² Fairfax.....	250	¹ Milpitas.....	300	² San Pablo.....	500
¹ Anderson.....	750	¹ Fairfield.....	1,008	¹ Mission San	500	² San Quentin..	3,000
¹ Angel Island..	500	¹ Fair Oaks.....	300	¹ Jose.....	200	² San Rafael....	5,512
¹ Antioch.....	1,939	¹ Fall River Mills	300	¹ Modesto.....	9,241	² Santa Clara....	5,220
¹ Aptos.....	300	¹ Farmington....	300	¹ Mokelumne Hill	900	² Santa Cruz....	10,917
¹ Arbuckle.....	900	¹ Felton.....	300	¹ Monterey.....	5,479	² Santa Rosa....	8,758
² Atherton.....	500	¹ Folsom.....	2,000	¹ Morgan Hill...	646	² Saratoga.....	500
^{1,2} Auburn.....	2,289	¹ Forestville....	250	¹ Mountain View	1,888	² Sausalito.....	2,790
¹ Barber.....	500	¹ Fresno.....	45,086	¹ Mt. Eden.....	200	² Sebastopol....	1,493
² Belmont.....	375	¹ Gilroy.....	2,862	¹ Napa.....	6,757	² Shasta.....	200
¹ Belvedere.....	616	¹ Glen Ellen....	1,000	^{2,4} Nevada City...	1,782	² Shellville.....	200
¹ Benicia.....	2,693	¹ Gonzales.....	500	¹ Newark.....	500	² Sheridan.....	250
¹ Ben Lomond...	400	¹ Grass Valley...	4,006	¹ Newcastle....	750	² Smartsville....	300
¹ Berkeley.....	56,036	¹ Gridley.....	1,636	¹ Newman.....	1,251	² Soledad.....	400
¹ Biggs.....	683	¹ Grimes.....	500	¹ Niles.....	1,600	² Sonoma.....	801
¹ Bolinas.....	200	¹ Groveland.....	500	¹ Novato.....	400	^{1,2} Sonoma.....	1,684
¹ Brentwood....	400	¹ Guerneville...	800	¹ Oakdale.....	1,745	² South San	
² Broderick....	700	¹ Hamilton City.	250	² Oakland.....	216,261	² Francisco....	4,411
² Burlingame...	4,107	¹ Hammonton....	500	¹ Oakley.....	200	² Standard.....	500
¹ Byron.....	350	¹ Hayward.....	3,487	¹ Occidental....	600	² Stanford Uni-	
¹ Campbell.....	600	¹ Hercules.....	373	¹ Oland.....	1,582	² versity.....	2,700
¹ Capitola.....	300	¹ Hillsborough..	931	¹ Oroville.....	3,340	^{1,2} Stockton.....	40,296
¹ Carmel.....	638	¹ Hollister.....	2,781	¹ Pacheco.....	300	^{1,2} Suisun.....	769
¹ Cement.....	1,000	¹ Honcut.....	500	¹ Pacific Grove..	2,974	¹ Sunol.....	350
¹ Centerville...	1,000	¹ Hughson.....	2,500	^{2,3} Palo Alto.....	5,900	¹ Sunnyvale....	1,675
¹ Ceres.....	637	¹ Ione.....	1,000	¹ Paradise.....	500	¹ Sutter City....	250
¹ Chico.....	9,339	¹ Irrington.....	1,000	¹ Patterson.....	694	¹ Sutter Creek..	920
¹ Colfax.....	573	^{1,2} Jackson.....	1,601	¹ Penn Grove....	200	¹ Tehama City..	196
¹ College City..	250	^{1,2} Jamestown....	750	¹ Penryn.....	250	¹ Tiburon.....	400
¹ Collinsville...	200	¹ Kennett.....	464	¹ Perkins.....	300	¹ Tracy.....	2,450
¹ Colma.....	1,500	² Kentfield....	500	¹ Petaluma.....	6,226	¹ Trces Finos...	300
^{1,2} Columbia.....	200	¹ Kenwood.....	300	¹ Piedmont.....	4,282	¹ Tuolumne....	1,500
¹ Colusa.....	1,846	¹ Kewick.....	200	¹ Pike City.....	200	¹ Turlock.....	3,394
¹ Concord.....	912	¹ King City.....	1,048	¹ Pinole.....	967	¹ Vacaville.....	1,254
¹ Cordelia.....	300	¹ Knights Ferry..	200	¹ Pittsburg.....	4,715	^{2,3} Vallejo.....	21,107
¹ Corning.....	1,449	¹ Knights Land-		¹ Pleasanton....	991	¹ Vina.....	300
¹ Corte Madera..	607	¹ ing.....	400	¹ Port Costa....	900	¹ Vineburg.....	200
^{1,2} Cotati.....	200	¹ La Grange.....	200	¹ Princeton.....	300	¹ Walnut Creek..	538
¹ Cottonwood...	500	¹ Larkspur.....	612	¹ Red Bluff.....	3,104	¹ Warm Springs..	200
¹ Coyote.....	200	¹ Lathrop.....	600	¹ Redding.....	2,962	¹ Waterford....	250
¹ Crockett.....	1,500	¹ Lewiston.....	200	¹ Redwood City.	4,020	¹ Watsonville...	5,013
¹ Crow's Landing	300	^{1,2} Lincoln.....	1,325	^{2,4} Richmond....	16,843	¹ Wheatland....	435
¹ Daly City.....	3,779	¹ Live Stock....	300	¹ Rio Vista.....	1,104	¹ Williams.....	650
¹ Danville.....	400	¹ Livermore....	1,916	¹ Ripon.....	500	¹ Willows.....	2,190
¹ Davenport....	300	¹ Lomita Park...	600	¹ Riverbank....	200	¹ Winters.....	903
¹ Davis.....	939	¹ Loomis.....	500	¹ Rocklin.....	643	¹ Woodland....	4,147
¹ Decoto.....	300	¹ Los Altos.....	500	¹ Rodeo.....	300	¹ Woodside.....	300
¹ Del Monte....	300	² Los Gatos.....	2,317	¹ Roseville.....	4,477	¹ Yolo.....	350
¹ Denair.....	200	¹ Los Molinos...	200	¹ Ross.....	727	¹ Yuba City....	1,708
¹ Dixon.....	926	¹ Madison.....	1,300	¹ Sacramento...	65,908		
¹ Drytown.....	200	¹ Manteca.....	1,286	¹ Salinas.....	4,308		
¹ Duncan's Mills.	200	¹ Mare Island...	600	¹ San Andreas...	1,183		
¹ Durham.....	250	¹ Martinez.....	3,858	² San Anselmo...	2,475		
¹ Dutch Flat....	750	² Marysville....	5,461	² San Bruno....	1,562		
¹ Eldridge.....	500	¹ Maxwell.....	500	² San Francisco.	506,676		
¹ El Cerrito....	1,505	¹ Mayfield.....	1,127	¹ San Jose.....	39,642		
¹ Elmira.....	350	² Menlo Park....	900	¹ San Juan.....	350		

¹Unmarked—Electricity only.²—Gas only.³—Gas and Electricity.¹—Gas, Electricity and Water.²—Gas, Elect. and St. Railways.³—Electricity and Water.⁴—Electricity supplied through other companies.⁵—Gas supplied through other companies.⁶—Water supplied through other companies.**"PACIFIC SERVICE" FACTS:**

"Pacific Service" has in use 2,649 miles of High Tension Transmission lines and 6,977 miles of Underground and Overhead Distribution System. If extended in line from San Francisco would reach Petrograd, Russia.

Operates 25 Hydro-Electric Power Plants.

Operates 4 Steam-Electric Power Plants.

Operates 20 Gas Plants.



That GRATIFYING Moment

THIRIFT and the rewards of thrift find expression in the act of cutting the coupons from your carefully chosen bonds.

At present prices the liberal yield from high-grade bonds appeals to the foresight of men who habitually think ahead.

On our Current Purchase Sheet you will find a wide range of securities investigated with painstaking care—from which you may make desirable selections. Sent on request for PG-166.



The National City Company

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Pacific Service Magazine

Volume XIII



Number 1

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needed with the San Francisco Supply Department. The present structure, of which Mr. Wm. Knowles was the architect and builder, was started about January 1, 1919, and completed October 17, 1920, at an approximate cost of \$225,000.

In connection with the construction work Mr. Knowles furnishes the interesting information that the sheet piling of pine installed in 1850 was found

consists of ninety 200-watt nitrogen filled lamps, the effect of which is clearly shown by the interior view taken at night with a ten-minute exposure.

The second floor, as stated before, contains the auto repair shop, store-room and division machine and carpenter shops. The auto repair shop being on this floor pits are out of the question, so the method of getting under a machine is by raising either end with



The San Francisco garage is well equipped in the matter of light.

to be in excellent condition upon excavating the present building foundation. Good footing for the foundation was found thirteen feet below the curb line. In all, about 14,000 cubic yards of earth was excavated.

The basement of the building will garage 100 machines and the main floor 112. A prominent feature of the main floor is its accessibility, two entrances being provided from each of the two streets, Howard and Fifth. The lighting

chain blocks and sitting on a box to do the work.

The machine shop contains lathes, drill presses, pipe machines, emery grinders, shapers, square shears, power press, together with the necessary benches and equipment to handle all kinds of work from tool making to overhauling concrete mixers. In the north-west corner of the machine shop is the carpenter shop, containing circular and band saws, boring machine and benches

where such work as making benches, tool boxes, fitting cabinets, ladders and repairing truck bodies is continually being done.

In the southwest corner is the electric repair bench where street lamps, motors and such small shop work is handled. A feature of the equipment is a test rack where various voltages and currents are available for testing.

At the present time the garage is taking care of approximately 190 cars, doing such work as garaging, gasing, oiling, all repairing, painting and servicing.

In the tire department all work connected with tires is handled, such as tube repairs, sectional casing repairs, re-

treading and general work incidental to this branch of the service.

All members of our "Pacific Service" family remember the old San Francisco garage which was situated on Stevenson street, between Third and Fourth. This is now the location of the Industrial Gas Laboratory that has proved so excellent a feature of our San Francisco Division's

working organization. It was, of course, inadequate as a storage house for the great number of auto cars and trucks which are used in the daily grind of our company's service. The new building is handy as well as commodious and, as before stated, it fills a long-felt want.



How autos are trussed up for repair work.



General view of the machine shop.

An Up-to-Date Meter Repair Shop

By D. J. GRAY, Foreman

The remarkable facilities of our newly completed gas meter repair shop in the San Francisco Division are worthy of more than passing comment. In San Francisco we have approximately 130,000 gas meters in service, and the repairing and testing of these keep the men in the shop busy continually. In addition, the shop does considerable of the work for other divisions.

The perfection of the gas meter repair shop organization and the excellent working facilities for the care of gas meters enable our company to maintain the highest efficiency. The shop is strictly up-to-date. In building it opportunity was offered for making a number of changes tending to facilitate the work and effect appreciable economies. As a matter of fact, additional changes will unconsciously suggest themselves as work proceeds. Among such changes the following may be mentioned:

Provers are so arranged that the operator can handle two at a time. They are equipped with automatic air-raising devices and specially built 20-foot draining tables are provided so that operators can handle 80 meters simultaneously.

Handling of neutral oil for oiling diaphragms of meters is expedited. A 40-gallon barrel with centrifugal pump piping and a trough with gas burner attached for heating oil to the required temperature are installed. This new method not only saves floor space but affords quicker action.

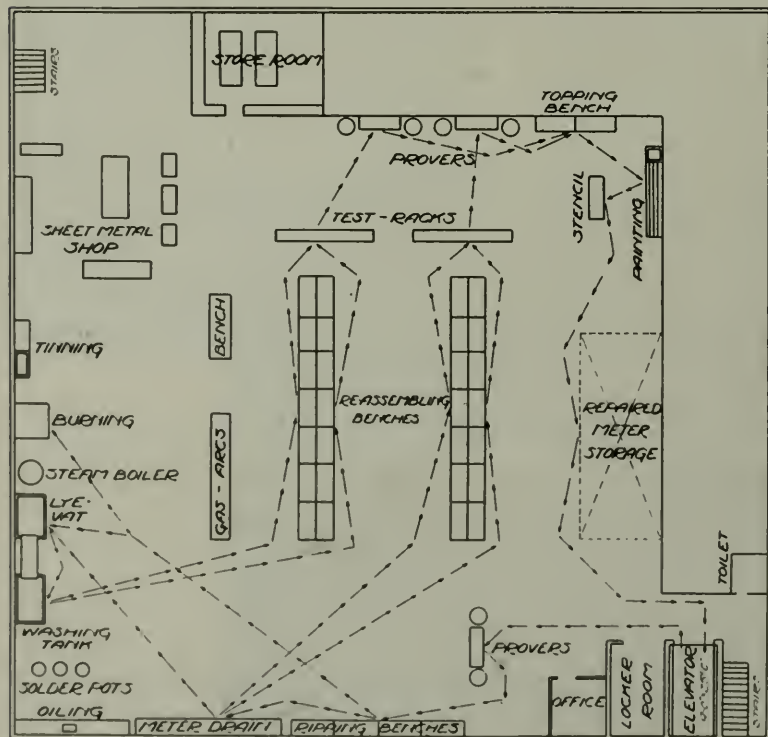
A caustic soda bath, as installed, consists of a large caustic soda tank of 80 cubic feet content, sufficient to care for the largest gas service meter. The tank is heated with steam coils supplied with live steam from gas heated boilers.

A large storage battery industrial truck, capable of carrying 100 meters from the shop to the distribution room, is used.

The truck is also used for handling the disposal of all garbage and waste from shop.

All equipment is arranged so that meters travel in a continuous circuit during the various stages of repairs, minimizing loss of time.

The new shop offers many features for the welfare of the employees. Better working and sanitary conditions and improved lighting tend to make the men physically and mentally better fitted for their duties, increase the output in quantity and quality and



Graphic representation of meter travel in repair shop.



Hand-truck.

decrease accidents and spoilage. During the winter months the shop is provided with a gas arc installation that cannot be surpassed for illumination and economy. The installation is so designed as to meet the following requirements: properly directed light rays and of air currents, purifying the air at the work bench and combining good illumination with good ventilation.

The shop is located on the top floor of the building at Howard and Fifth streets. This top floor location is very desirable as it prevents the odors escaping from being obnoxious to neighboring tenants. It is well ventilated, naturally lighted and kept scrupulously clean.

The two principal types of meters repaired are the tin and iron case meters.

The tin meter as used by the company is the dry gas meter, similar to that invented by W. Richards in England in 1844 and later improved upon and commercialized by Thomas Glover. It consists of a box, usually rectangular in shape and made of tin plate, divided into two main compartments by a horizontal partition. The lower of these compartments is divided into two equal parts by a vertical partition midway between the front and the back of the meter. In the upper compartment there is an enclosed gas-tight chamber.

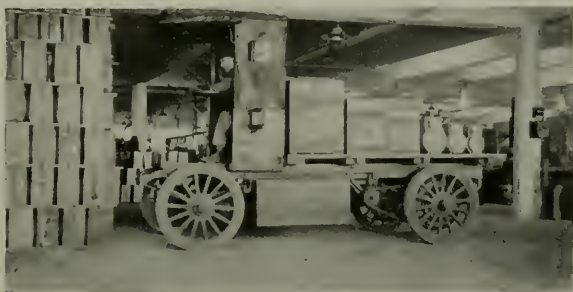
The measuring apparatus, contained in two divisions of the lower compartment, consists of a bellows in each division formed by means of a circular metal disc fastened to one edge of a leather diaphragm, the other edge of which is attached to the central partition, the whole forming a gas-tight space. The alternate opening and closing of these bellows by the pressure of the gas

as it is admitted, first into the space inside, then into the spaces outside of them, furnishes motive power which by suitable mechanism is made to operate valves to control the flow of gas into and out of the diaphragms and outer spaces and also to work the gears which record the amount of gas passed through the meter. The mechanism also controls the extent to which the bellows can open and close, so that a fixed and definite amount of gas passes into and out of the meters each time they are filled and emptied.

Our new shop arrangement enables us to reduce travel hundreds of feet with consequent saving in cost and better efficiency. The management has made this study for the best handling of meter repairs. No attempt will be made to go further into the explanation of the chart, it being self-explanatory.

The method of procedure with respect to consumer's meters is as follows. The meter enters the shop and stands for twelve hours, this to enable it to become acclimated for testing purposes, since it is essential that the meter be of the same temperature as the atmosphere of the room in which it is to be tested.

The incoming meters are tested on the proving apparatus. This equipment consists of two 10-foot standard meter provers, such as are used by the Bureau of Standards of the U.S. Government in their tests. The new provers are specially equipped with the most modern air raising devices to eliminate the old method of raising the prover bells by hand power. To show the delicacy of the prover test, it is necessary that the water in the prover be of the same temperature as that of the surrounding atmosphere, since a difference of 4 deg. F. between the water in the prover and



Industrial truck for hauling meters to distribution room.

the atmosphere will show a discrepancy of 1 per cent in the test.

The test made by the operator consists of a check run according to the size of the meter. The proof is recorded on the meter tag by the operator, in percentage fast or slow. This tag is forwarded to the Bookkeeping Department for record.

The meter now travels from the prover operator to the ripping bench, where the top and back plates are removed, after which the water and condensation are drained from the columns and body of the meter on specially built draining tables. The diaphragms are then carefully tested and meter cleaned. If the diaphragms test O.K. under an 8-inch gas pressure they are given a small quantity of a fine neutral oil which preserves the life of the leather, giving it more flexibility. The valves of the meter are re-ground, stuffing boxes are repacked with fine Germantown wool that has been dipped in tallow and beeswax mixed in proper proportions at a melting temperature, the indexes are examined and cleaned, other minor repairs are given immediate attention.

Where the diaphragms are found faulty the entire backs and fronts are removed. If small leaks are found in the sewing or tying of the diaphragms they are shel-laced and given an additional bath of oil.

It may be well to mention here that all diaphragms found beyond repair are replaced by new ones. Prior to this diaphragm installation the meters are given a thorough scouring in hot caustic soda.

After all necessary parts are retinned and all parts are replaced and resoldered, the meter is now equivalent to a new meter. We are now ready for the next operation.

The slow motion or flame test is now made to ascertain whether the meters will register the passage of a small volume of gas and to observe any small leaks. This test consists of the meters being connected to a burner and to a gas supply as shown in the picture. Before starting this test the working parts are eased up and lost motion taken up by passing enough gas to cause at least one revolution of the tangent of the meter, this being done by the operator.

Before each meter goes to the topping bench and paint shop it is passed through the proof test. This test is made to determine the error in registration shown by the meter in the passage of a measured volume of air or gas at the normal rate through a check and open outlet

connection. The meters are then adjusted to within $\frac{1}{2}$ of 1 per cent on open and check runs in accordance with the Railroad Commission regulations. General Order No. 58, Paragraph 37, covering periodical tests of service meters, requires that 15 per cent of the total meters in service must be changed each year; in addition, there are a number of meter changes ordered by the Bookkeeping Department. The total number of meters removed and tested approximate 35,000 per year. There are another 1200 meters which come into the shop due to consumers' removals. All newly bought service meters are tested, numbered and stenciled with the date purchased. This item covers, in a year, about 7,000 meters. In figures the meters handled by the repair shop amount to 45,000 per year.

Every meter placed in the O.K. stock is dipped in a newly arranged paint trough. A maximum efficiency has been obtained by dipping meters instead of using the ordinary brush method. Care is exercised to keep the paint off the index, the meter being dipped to this point and while draining the top is painted with a brush. After the paint has dried all meters are stenciled with the Company's serial number and the year of repair.

All meters repaired, tested and painted are then ready for service. These meters are delivered by the truck to the Distribution Room, where they are placed on shelves in accordance to sizes to enable the oldest stock being used first for the consumers' service. Individual racks are provided for each meter setter. These racks are supplied with meters arranged during the night to be delivered to the meter setter the next day, thus eliminating delay during working hours. Records of the number and statement of the meter delivered to meter men are kept on file in the distributing room.

Other important features of the repair shop include the gas arc repairing apparatus, the sheet metal work shop and the solder production plants.

In the gas arc department all gas arcs used in the division are repaired, parts renewed and the arcs practically reconstructed.

The sheet metal section is complete within itself, being well equipped with sheet metal worker's equipment and tools. In this section various new sheet metal work is constructed for the different departments of the division.

How Public Service Companies are Financed

By W. E. CREED.

The following is the seventh and last of a series of short papers by our company's president on matters vital to the public service, particularly the problems in whose satisfactory solution the public service corporations and the public they serve are mutually concerned. Under the title "That the Public May Know" the entire series has been published in pamphlet form, and copies may be had upon application to the company.—EDITOR PACIFIC SERVICE MAGAZINE.

The term, "financing," has a variety of definitions and applications, but is here used to mean the task of securing new capital for the public service companies. The demands upon them are steadily growing. Old customers want more service; new customers continually appear and ask to have their needs supplied. So the companies face, with no limit in sight, the necessity of extending and improving plants, building new ones, enlarging distribution systems, and acquiring additional equipment of many kinds.

All this requires money in very large amounts. Where does it come from and how is it obtained? Answering briefly, it is secured from the investors of the United States and is bought from them just as cast-iron pipe, copper wire, or electric generators are bought from manufacturers. The price for the use of this money is interest, paid either in the form of dividends on stock or, according to the contract, in some form of obligation evidencing a loan, such as a bond.

The companies are regulated and are not allowed to earn more than a fair interest return on the value of their properties devoted to the public use. This interest return cannot be retained by the companies to meet the cost of improvements, extensions, or new works, but must be distributed to those who furnish them money, as the price for the use of that money. Unless this distribution is made, money cannot be obtained any more than labor can be obtained if the wages of labor are not paid. Financing development work out of revenues could only be accomplished if rates were high enough to permit it, but an increase beyond the ability of the public to pay would be necessary. Rates would have to be very materially increased above the present level, as the companies must supply about five dollars of new capital for each one dollar of

increased gross revenue. In other words, to supply the demands of customers who pay an annual gross revenue of one hundred thousand dollars, at least a half million dollars of new money must be invested.

The only way for the companies to keep pace with the needs of the state is by securing new money from the investors of America who lend money and buy stocks. The lenders of money are the buyers of bonds. They occupy the position of every other lender on mortgage, and demand some equity over and above the amount of money they lend, so that, after taking care of discounts, about sixty-five to seventy per cent of the actual money needed in the financing of the public service industry can be obtained from the sale of bonds. The balance of the money, amounting to thirty or thirty-five per cent, must come from the investors, who purchase stocks and become the owners of the property. These stocks are ordinarily of two classes: first, a preferred stock; and second, a common stock. The preferred stockholder, as an investor, demands an equity to support his investment so that all the money needed can by no means be obtained from bonds and preferred stocks. An equity must be put behind the preferred stocks as well as behind the bonds. The common stockholder on his part supplies this equity and is really the guarantor of the investment of the bond holder and the preferred stockholder. For every single dollar the common stockholder invests, there can be obtained at least five dollars more from bonds and preferred stocks, so it is of the greatest importance that he be protected and encouraged.

The companies buy their money from these investors by going directly to them to make the purchase, and also by approaching them through the investment bankers and bond houses that have many

clients among the investors. One thing must be thoroughly understood. An appeal based solely on necessity will not attract investors. The prime consideration with them is the safety of the investment offered. They are unmoved by a story of the needs of the companies or by an alluring picture of the destiny of California. Sentiment does not stir them. They insist, as a condition precedent to acceptance, that the investment be intrinsically sound, that they be assured prompt and sure payment of interest when due, and that the investment, in whatever form, be reasonably convertible into cash.

To meet this standard, certain fundamental conditions must exist. (1) Physical properties must be properly designed and maintained, the business must be well managed, and there must be a good market for the services offered. (2) Rates must be adequate to produce revenues sufficient to cover just and reasonable costs of operation, including a fair rate of interest on the value of the properties used in the business. (3) There must be no dilution of securities

by unwise issues, and capital expenditures must be intelligently made to add to the security of investors and increase revenues. (4) Confidence must be created in the minds of investors that the public policy of the state is to treat them fairly so that there will be no confiscation or destruction of their investment, and that their returns, while small compared to the returns in private industry, will be certain and continuous and their principal remain safe.

It is obvious that management is able to control some of these conditions. So far as management is in a position of responsibility, it must bear the odium of failure or receive the credit of success. It is equally obvious that management cannot control all of these conditions and that some of them depend upon the will of our people as expressed in the public policies of the state. It is therefore essential that our people think soundly, disregard prejudices, insist upon facts, and understand that economic laws cannot be ignored without retarding the progress of California toward the goal which lies before it.



OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION

The Educational Committee, under the direction of the chairman, W. M. Henderson, has organized a plan for carrying on class room instruction in the various activities of our Company. A Director of Education, Mr. R. R. Cowles, of the Department of Engineering, has been appointed and under his supervision the text for the various courses is now being prepared. It is expected that by the 15th of September the first lessons will be ready for circulation.

Mr. R. R. Cowles is very well qualified to carry out the program. For many years he has been associated with University Extension work and instructor in the Evening High School of Oakland. Planning the work and preparing the courses is going ahead in good order. Associated with the Director of Education is an Advisory Board. The members of this have been selected with the idea of getting the best talent in the company working in the interest of education and on a definite plan. Every company activity has been considered and a representative man has been selected to advise and work out a course dealing with the subject he is best qualified for. The members of the Advisory Board are:

R. C. Powell	D. J. Martin
C. H. Delaney	R. E. Fisher
J. P. Jollyman	L. J. Corbett
R. A. Monroe	W. S. Yard
E. G. McCann	H. Crawford
Geo. Bragg	L. D. Tyce
V. Hughes	E. C. Wood

The courses that have been established and the chairman responsible for each branch are as follows:

A-Accounting.....	D. J. Martin
C-Commercial.....	R. E. Fisher
E-Electric.....	J. P. Jollyman
G-Gas.....	W. M. Henderson
H-Hydraulics and Civil.....	R. Monroe
P-Popular Lectures.....	E. C. Wood
S-Steam and Mechanical...	Chas. Delaney
X-Accident and Safety.....	V. Hughes

Each course will be complete as far as possible or consistent with the com-

pany's business. Each subject will be treated from the point of view of how it is handled within the company's affairs. Sufficient of the first principles, or fundamentals, will be given where necessary. The plan for instruction and the circulation of the courses is as follows:

In each section where there is interest in any particular subject, they will organize a group of members as a class. The group can consist of any number, although small classes are recommended. The class, when organized, will proceed to elect from their midst a chairman, who will act as leader. This chairman will be expected to keep in communication with the Educational Committee, and through him the classes will be supplied with text and other necessary information provided by the Educational Committee.

Each course will be divided into a number of topics and each topic into a number of lessons. It is expected that the classes will meet at regular and definite times and places, and it is suggested that weekly meetings will be advisable. The idea that it is desired to adopt is that the classes be of a "round table" nature. Full instructions will be forthcoming with the first lessons and from time to time thereafter. For the present, all that is expected is that the groups proceed immediately with their organization and submit to the Educational Committee their desires so that we can prepare to meet the demand. It is not intended to give individual instruction, as our organization permits of group instruction only.

Many popular lectures were prepared early in the year. These are all on a subject that the company engages in. Each is an illustrated lecture with lantern slides. The author in each case is directly engaged in the particular activity upon which he has written. These lectures have been more or less in circulation during the recent months and dates are booked now for the rest of the year. There is still much open time and arrangements can be made through the Ed-

educational Committee for any particular topic. These lectures consist of the following:

Gas Production.....James Dickey
Electric Development.....C. E. Yost
Electric Meters.....L. D. Tyser
Gas Meters.....D. J. Gray
Operation and Maintenance
of Automobiles.....E. C. Wood
Sale and Utilization of Gas, Frank Talcott
Electric Distribution.....H. S. Lane

Arrangements have been made with the General Electric and the Westinghouse Electric Companies to use illustrated lectures put out by them. Some of these have been used with good success and much interest has been shown.

The Committee on Education is so well organized now and established that it is able to meet any demand placed upon it for a paper, pictures or lectures on most any activity that our industry engages in.

On Thursday, August 11th, an educational program was put on at Fresno under the local section of the Pacific Service Employees Association. Mr. Jas. Dickey, Engineer of Gas Production, addressed the meeting and showed lantern slides of the Company's plant. He gave a very good lecture on the subject and entertained a gathering of about sixty members and their friends. The meeting was held in the Garage Building at the new gas works. Following the meeting the party adjourned to Roeding Park, where a watermelon feed was enjoyed.

In San Francisco, on the evening of August 11th, the Educational Committee of the local section presented a program of entertainment at the Industrial Laboratory, 241 Stevenson street. On this evening before a gathering of over 100 members and their friends a very entertaining educational program was presented. W. M. Henderson, Chairman of the Educational Committee, outlined the work which has been planned for the balance of the year, soliciting interest on the part of the members to support the work of the Educational Committee. Mr. Frank Talcott presented an illustrated lecture on the Utilization of Gas. This was very originally done with pictures. Following Mr. Talcott, Mr. Fred Pelle discussed the problems involved in the combustion of gas. His talk was very entertaining, enlightening and amusing. He wound up

with a good demonstration of some of the new appliances using gas. Following the program the evening was concluded with a dance, music furnished by the Gas House Orchestra, and refreshments, consisting of doughnuts and coffee, were served by the chef-de-cuisine, Edward C. Wood.

A large crowd of employees gathered at Oakland headquarters Monday evening, July 11th, to hear Mr. Gray of the San Francisco Gas Distribution Department, give an illustrated lecture on Gas Meters.

All makes and every part of the meters were shown and explained by Mr. Gray. He also dealt with the various troubles gas meters are subject to. The lecture proved very interesting and instructive and will be helpful to the employees in their work.

Mr. W. M. Henderson spoke to us on the work being done by the Educational Committee. There will be courses in most every branch of the Company's activities for those desiring to improve themselves in their work.

On Tuesday evening, July 19th, 1921, the Steam Department, Station "C" entertained employees and their friends at the Ebell Club, Oakland.

Joe Estes deserves honorable mention for his skill at the piano, as does Dean Jackson with his vocal selections. Both favoring us with solos.

Some promising actors made their appearance in the skit, entitled "Wanted, A Valet," which was the main feature of the evening. Those taking part were:

A Lawyer.....Chas. Carlson
His Valet.....J. J. Tracy
An Applicant.....J. L. Chapman
Another Applicant.....E. E. White

A. M. Austin and H. Viera made a hit as a pair of Jazz boys. "Something Original" was cleverly given by R. Antonelli and Company. The program closed with Joe Estes, Chas. Carlson, W. D. Jackson, B. J. Perry and Jack rendering "Till We Meet Again."

The floor was then cleared for dancing.

The Gas House Terriers Athletic Club held an election of officers for the new term, beginning July 1, 1921. The only office for which there was a contest was that of Secretary, Dick Von der Heide beating Bill Kitto by one vote. Tom Hauchins was elected Chairman, J. H.

Baker re-elected Treasurer. The retiring Chairman and Secretary, Bill Reinhard and Harry Day, wish to thank the Club for their loyal support and hope that they will give the same co-operation to the newly elected officers.

"Lend me your ears," I want to tell you something. P. S. E. A. is not just a catch-phrase or a combination of meaningless words, no such thing. Instead, this emblem stands for an association of our employees who are not only banded together for company welfare but when the time comes are there also to extend a generous hand to anyone who needs assistance.

Recently our East Bay Section found that among its members there was one in need of assistance, so a ticket-selling campaign was started and the goodly sum of seven hundred dollars was realized. All departments contributed generously, but special mention shall also be made of individual efforts, first honors going to Miss Agnes Buckingham. Also deserving of credit were the Misses Markham and Gibbs. Special mention for our own company, the officers of which are ever on the alert to extend help to its employees. All members of P. S. E. A. thank you.

The tickets sold are being redeemed by two of Oakland's best picture houses, and here again worthy mention must be made of our best individual buyer, Mr. G. Grider of the Line Department, who purchased one hundred and twenty-seven tickets for the good cause.

After all, it was a grand success, and if necessary we will do it again. For what greater happiness can one experience than to know that one has helped his fellow man.

W. J. DELORIA.

On Friday, August 5, 1921, members of the Accounting Department, to the number of about thirty, were guests of Mr. G. Grider, the man of many tickets.

All those interested assembled at the P. S. E. A. club room sometime before seven o'clock, where our new dance floor, that is, the old floor plus a sprinkling of powdered wax, was given a try-out, after which all present proceeded to the Franklin Theater where a very enjoyable evening was spent.

VACATION AFTERTHOUGHTS—HAPPY VALLEY

The great majestic pine trees sheltering Happy Valley from the world are sway-

ing to and fro, the breeze gently blowing through their leaves and drawing aside the curtains of the forest. The pathway leading to Happy Valley is bordered by wayside flowers, with here and there a cricket chirping in the grass. The red and yellow leaves are fluttering down among the blossoms, carpeting the earth with a wondrous rug of many colors.

Hark!—what is that far distant music softly tinkling through the depths of the forest—an Elfin symphony directed by that music master of this land of enchantment, the great god Pan? How it fills the spirit with profound joy, until every care, every thought of the work-day world from which we came fades out of mind and is forgotten, and the heart asks for no greater joy than to abide forever under the soothing influence of the sylvan harmony. The hand striking the invisible chords falls ever more gently across the strings, and now, as from the harp through Tara's halls, no sound is heard save that which echoes and reechoes in the wondering heart of man.

As we wander along the banks of the little brook it is to us a living companion, now murmuring ripplingly of joys to come and, in its more placid moments, lulling us into a serenity and calmness in which we hear the voice of some beloved friend, whose presence we feel in the peaceful vale of Happy Valley softly whispering, "Come again, Come again, Come again."

ETHEL SAUNDERS.

Billing Department, East Bay Division.

SAN FRANCISCO SECTION INVITES YOU

Arrangements are now being made by the San Francisco Section of the P. S. E. A. for the first annual affair to be held under its auspices. According to present intentions on Saturday evening, October 1st, a ball will be held at the Fairmont hotel. Plans are being made to elect thereat the most popular girl in the San Francisco Division to reign as the Queen, and already several contestants are being put forward. Every effort will be exerted toward making this ball the greatest ever from every point of view.

On Sunday morning, October 2d, there will be a picnic excursion to Paradise Park.

It is the earnest desire of the officers and members of San Francisco Section to have as many members from outside sections as possible, as we believe that

these meetings will bring us closer together and, in doing this, we can work for the success of our Association.

Further information will be sent to members of the P. S. E. A. through the Division Manager, and any members of the various sections who contemplate attending these two affairs in San Francisco may communicate with Mr. G. S. Tracy, Chairman Program Committee, San Francisco Section, who will see that all details are sent them. The committee will be at the disposal of our guests, so that any arrangements they would like to make in San Francisco will be taken care of.

Hoping to have the honor of your presence, as, you know, "San Francisco knows how."

J. A. JOHNSON,

Chairman, San Francisco Division, Pacific Service Employees Ass'n.

Pacific Service Employees Association, as a body, extends hearty congratulations to Mr. Harry Ridgway, our genial manager of North Bay Division, who recently became a benedict.

His bride was Miss Ileta Bowers, of San Francisco. The happy couple made very little talk of their intentions and were united in matrimony before the majority of us knew anything about it. They are now comfortably domiciled at the Colonial Hall Apartments, in San Rafael.

That we wish them every success in life goes without saying.

Another happy couple to whom we extend the hand of good will are Mr. Jacques Terhell, of the Bureau of Tests and Inspections, and his bride, who was Miss Grace Cosgrove of San Jose.

Mr. Terhell and Miss Cosgrove met during the construction of the Newark Substation and it was amid those apparently unromantic surroundings that their courtship began and prospered. During the great war Mr. Terhell was connected with the aerial service, in part at Montgomery Field, Alabama, and in part at Park Field, Tenn. Mr. and Mrs. Terhell have taken up their residence in Oakland.

In our next issue of Pacific Service Magazine we expect to present a graphic account of the annual picnic held at

Fairfax Park, Saturday, August 13th. A feature of this event that will appeal particularly to our readers is the transformer installation contest involving keen competition among several active sections.

At a recent meeting of the executive meeting of our Association report was made of the opening of the ladies' rest room at Sacramento, on July 6th. Sacramento section came in for very high compliment upon the finished appearance of this room and the evident attention to comfort displayed.

From San Joaquin division comes a protest against what seems to be regarded as an exclusive attitude assumed by the employees of Colgate section not only in their manner of conducting their recent picnic at Lake Francis but, also, in adopting a somewhat cryptic inscription for the badges used upon that occasion. The following comes to us from San Joaquin division:

"We wish that someone of that Colgate division bunch would bring us from darkness to light so that we might figure out what those I. D. I. D. D. I. D. U's are all about. Also, tell us why you were so 'tight' with that Lake Francis party. We had that 'small admission fee' all ready. Just for that you watch these columns and see what we have to report shortly. Then you will know how it feels to be slighted."

A HERO IN OUR RANKS

On the morning of August 16th, as the 7 o'clock Southern Pacific ferry from San Francisco was nearing the Oakland mole, P. Dailey, an employee of San Francisco division garage, was standing on the lower aft deck when he heard screams. Pressing forward he found a crowd of passengers surrounding a woman whose little daughter had fallen overboard and was struggling in the water. Without hesitation Mr. Dailey threw off his coat, jumped into the bay and succeeded in rescuing the child after she had gone down the second time.

Rescuer and rescued were pulled aboard and the hero of the adventure, evading all publicity, made his way ashore in his wet clothes, too modest to even disclose his identity to the throng of admirers who pressed around him.

A Sojourn at Lake Spaulding Vacation Camp

By W. M. HENDERSON



Lake Spaulding vacation camp, one of the benefits of membership in the Pacific Service Employees Association.

Camping out is evidently contagious, like golf or the measles. When you see everybody else with the habit you cannot resist an attempt on your own part. But camping has characteristics all its own; golf you never get over, measles you once have and they never come back, camping you go through each year only to have a relapse the following season.

It's a great thrill when it's your first case. From preparation to realization there's a thrill in every moment. After consulting with all your friends and giving them a close-up on your plans they immediately proceed to upset the whole scenario and inject therein a lot of theory and some little experience. Evidently wishing to try out an experiment on you. On the whole, camping out at this day is nothing difficult, unless you have hopes or intentions to keep clean. The automobile makes it possible to carry along a complete commissary, including a stove, pots and dishes; if you deem it necessary, even an extra pair of socks. Some folks, I know, carry quite a wardrobe, but the three changes, put-

on, take-off and go-without will be found sufficient.

The camp facilities provided at Spaulding Lake by the Pacific Service Employees Association was our destination on our maiden attempt at the outdoor life. The party consisted of three boys and their mother who was taken along as a chaperon but proved herself the most useful member in the outfit, as nurse to the injured and cook, which, by the

way, is a most important factor. The fifth member was myself who drove and bossed. No tent was carried, but sleeping bags were provided for the lads, and a very ingenious folding bed and mattress made up the complete bedroom set.

Enroute to Spaulding we camped out one night. This stop was made at Lake Theodore, about five miles above Auburn. Spaulding, however, can be made from San Francisco in a day with little difficulty. The camp at Spaulding is a credit to the boys that constructed it and the Employees Association that conceived it. It is ideally located, right in the pines, some of which have been cleared away, making enough open room for sun and air circulation. It is not hot at the lake, yet quite warm in the sun, and at all times a fine cool breeze blows over the camp site. Four platforms and tents, size 16 x 18, have been set up facing sort of an open court. In front of each tent is an open air stove, brick-lined, with a cast-iron top and a flue pipe. Wood is plentiful, so stoking the stove is the only inconvenience; if this is done with

promptness and effect the stoves will function wonderfully. Running water has been piped to the camp site and two faucets are conveniently located. And such water! It has not a kick, but so refreshing externally or internally that prohibition would have no terrors for the race if this water were universally found. Tables, benches and seats have been provided. Electric service has been run through the camp, a service drop to each tent with two taps, making it possible to use small electric heating appliances if desired. About everything that one would imagine necessary to complete camp comfort has been set up, except, possibly, a phonograph. As this latter instrument is often one of torture it is possibly a credit to the camp that it was not included.

The country around Spaulding is spectacular. The lake alone is an attraction, and its setting among the pines and hills of granite make a picture difficult to paint with words alone. It is truly a rough country and most of it accessible only by a struggle. Trails exist, left from the days of construction, but as a rule you make your own. This fact makes it the more interesting. The walk to Fuller Lake is not a difficult one and very attractive. Bear Valley, below Spaulding, is another spot of beauty. This is accessible either by road or along the flume, the flume by far the prettier.

Another interesting spot is Fordyce Creek. This is only accessible by boat as it is in the very far north corner of the lake. The Employees Association has provided a new 12 ft. skiff for the use of vacationers, and with this it is possible to explore all quarters of the region.

Fishing on the lake is quite a pastime. It is no case of casting in a line and hauling out fish as fast as the hook can be baited. That would cease to be fun and the fishing would soon be of little interest. If you are endowed with patience and persistence, the reward will be yours. Assuming such is the case, then equip with hooks, line, reel and pole, and you are organized for battle. If it's bass you seek, then a spoon or minnow will serve as bait, sometimes. But the fish in Spaulding are educated and they cannot be fooled all the time with imitations. The best way is to go over by the old barn and dig for

angle worms, then with these as a start go down by the shore of the lake and fish for chub, a small fish with which the lake is well stocked. When you accumulate a stock of these you push off in the boat for the fishing grounds which you assume to be on the other side of the lake. Why one must go as far as possible and to the most difficult places in order to fish, is beyond me. Any place in Lake Spaulding is as good as another. Now the chub serve as bait; these are kept alive and when used it is only necessary to hook them through the back. They serve in the water, and your trout or bass if off his guard will fall for the temptation,—poor fish! Just to show how well informed some of the fish in the lake are, I saw a bass look over a chub that was so hooked on a line. This bass would swim up to the chub, eye it and then retreat only to return as though to attack, but again swim away. This performance was kept up for a while but never a nibble did the bass take. Rather than hold the bass in such suspense the chub was removed from the hook and cast into the water a free fish, but only for a moment. Mr. bass took him in immediately.

On the whole, the fish are worthy of the attempt to catch them. One to four pound beauties are pulled out regularly. Still, there are just as good fish in the big Spaulding pond as have ever come out of it, so do not be discouraged just because I spent a week on the premises.

Spaulding is included in the Drum Division. This section of the Employees Association is a going organization led by Hugh Flynn, a man with originality. It is their practice to hold a meeting monthly, and on such occasions the meeting is carried to the members. That is, a Sunday is set aside for the event, then a different community each month



"Pacific Service" baseball in Bear Valley.

is selected as the location. Everybody and their friends are invited and all bring a picnic lunch. Some special entertainment is usually provided, after which the section sets up the ice cream all around and the wives or ladies in the particular section put up the cake which, of course, is home made.

On Sunday, July 24th, the outdoor event was held at Bear Valley, two miles below Spaulding. It was a great day, and members and employees from all over the section assembled for the occasion. There was nothing extravagant about the entertainment, nor expensive, the whole being put on entirely by the members or the folks in the community. For instance, after lunch a ball game was staged. Drum played and beat Bear Valley 16 to 10. The game was featured by everything that goes to make baseball, but most notable of all was the fact that both pitchers managed to see the game to completion. Next, some of the boys from ranches nearby put on a couple of pony races followed by fancy riding. There was to be steer riding, but the cows in such a peaceful valley

are too contented to offer a contest for vaqueros. After foot races for boys and girls from 7 to 70 and other field events everybody adjourned to the pines for ice cream and cake. That it was some day, was testified to by the 300 odd people that attended. The surprising thing is that it was put on so simply and cheaply. Drum seems to have found the secret of division organization and makes capital interest of it by holding these monthly meetings.

There is one excellent effect which is evidently the result of these picnic meetings promoted by the Employees Association where the whole country side is invited to participate. That is the high respect and good will that is everywhere in evidence toward the Pacific Gas and Electric Company and its employees. As soon as I made it known that I was one, words of praise for the organization were immediately forthcoming. This tribute comes from the storekeepers in the mountain communities and from the farmers. They make you proud of "Pacific Service."

The Coming Gas Convention at Del Monte

Gasmen of the Pacific Coast are preparing for their annual meeting to be held this year at the Hotel Del Monte Sept. 20-23, inclusive.

Arrangements this year are a departure from the usual practice, the activities now being organized under three classifications, accounting, commercial and technical. A definite period of time has been allotted to each committee. The meetings committee has arranged the following attractive program of papers and reports:

ACCOUNTING COMMITTEE

A. P. PARRATT, *Chairman*

Combination Gas & Electric Register.....	H. W. BEEKMAN
Machine Bookkeeping.....	F. C. INGRAM
Machine Accounting.....	C. W. PLATT
Accounting Records and Valuation Practice.....	R. E. CROSSMAN

COMMERCIAL COMMITTEE

FRANK WEISS, *Chairman*

Industrial Gas Galvanizing.....	C. M. ROBERTS
Candy Making.....	J. BEVERIDGE
Heat Treating Steel.....	JOHN B. REDD
Gas Arcs.....	F. TALCOTT
Gas Fired Boilers for Heating.....	M. L. PAGE
Warm Air House Heating.....	J. B. SMITH
Sales and Compensation of Salesmen.....	GEO. EGGLESTON
Advertising.....	G. D. MANTLE

TECHNICAL COMMITTEE

E. L. HALL, *Chairman*

Thermal Efficiency of Oil Gas Sets.....	E. L. HALL
Holder Capacity.....	J. M. DICKEY
Protective Covering for Steel Pipe.....	L. M. KLAUBER
"Old Age" Gas Meters.....	C. R. MILLER

On Saturday, July 16th, the third sectional get together dinner of the season was held at Portland, Oregon. About 80 members and guests assembled. President Kapus presided, and in attendance were the other officers of the Association, including Vice-President Henry Bostwick and Secretary W. M. Henderson, both of "Pacific Service." The reports presented showed the gas industry generally to be in a remarkably healthy condition. Fully 170 new members of the P. C. G. A. have been enrolled, so far, this year. This surpasses all previous records. The outing included an auto trip along the Columbia river highway. Portland in July is unusually attractive and the Columbia river gorge is at its scenic best. Altogether, it was a wonderful outing.

And now, everyone is looking forward to Del Monte.

The Financial Side of "Pacific Service"

Following is condensed approximate Income Account Statement for the month of July, 1921, compared with the same month last year:

CONSOLIDATED INCOME STATEMENT (Including Operations of Mt. Shasta Power Corporation)

MONTH OF JULY

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$ 2,987,341.24	\$ 3,024,574.46	\$	\$ 37,233.22
Maintenance	282,419.16	246,906.62	35,512.54	.....
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	1,630,226.49	1,858,958.91	.....	228,732.42
Total Expenses	\$ 1,912,645.65	\$ 2,105,865.53	\$	\$ 193,219.88
Net Income.....	1,074,695.59	918,708.93	155,986.66	.....
Net Interest Charges	394,090.29	366,166.97	27,923.32	.....
Balance.....	\$ 680,605.30	\$ 552,541.96	\$ 128,063.34	\$
Bond Discount and Expense	33,261.92	29,994.50	3,267.42	.....
Balance.....	\$ 647,343.38	\$ 522,547.46	\$ 124,795.92	\$
Reserve for Depreciation	283,333.34	232,938.64	50,394.70	.....
Balance to Surplus.....	\$ 364,010.04	\$ 289,608.82	\$ 74,401.22	\$
Dividends Accrued on Preferred Stock	184,211.29	151,502.20	32,709.09	.....
Balance	\$ 179,798.75	\$ 138,106.62	\$ 41,692.13	\$

The small decrease of \$37,233.22 in gross earnings is the net result of the recent reduction of 9% in electric rates coupled with a smaller seasonal demand for electric energy for irrigation purposes as compared with July, 1920, offset to a considerable extent by increased business. The really significant feature of the statement is the substantial reduction of \$193,219.88 in operating expenses, resulting in a gain of \$155,986.66 in net income during the month.

Statement for the seven months ended July 31st., follows:

SEVEN MONTHS TO JULY 31ST

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$21,954,527.17	\$19,252,208.66	\$ 2,702,318.51	.....
Maintenance.....	1,975,969.68	1,451,313.06	524,656.62	.....
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts..	12,048,087.14	11,229,678.07	818,409.07	.....
Total Expenses.....	\$14,024,056.82	\$12,680,991.13	\$ 1,343,065.69	.....
Net Income.....	7,930,470.35	6,571,217.53	1,359,252.82	.....
Net Interest Charges.....	2,838,162.47	2,581,359.68	256,802.79	.....
Balance.....	\$ 5,092,307.88	\$ 3,989,857.85	\$ 1,102,450.03	.....
Bond Discount and Expense.....	225,861.15	156,214.24	69,646.91	.....
Balance.....	\$ 4,866,446.73	\$ 3,833,643.61	\$ 1,032,803.12	.....
Reserve for Depreciation.....	1,983,333.34	1,624,116.53	359,216.81	.....
Balance.....	\$ 2,883,113.39	\$ 2,209,527.08	\$ 673,586.31	.....
Dividends Accrued on Preferred Stock....	1,245,403.37	1,049,216.96	196,186.41	.....
Balance.....	\$ 1,637,710.02	\$ 1,160,310.12	\$ 477,399.90	.....
Dividends Accrued on Common Stock.....	991,785.03	991,785.03	.....	.....
Balance.....	\$ 645,924.99	\$ 168,525.09	\$ 477,399.90	.....

The rapid expansion of the Company's business is indicated by the fact that in the seven months' period to July 31st, 1921, the gross earnings of \$21,954,527.17 exceeded the entire revenue of any single year prior to 1918, and registered an advance of \$2,702,318.51 over the same period last year. Of this amount \$1,343,065.69, or approximately one-half, was absorbed by increased operating expenses. The constant addition of new capital required by additions and extensions to the Company's system incidental to its uninterrupted growth is reflected by the increase of \$256,802.79 in bond interest and of \$196,186.41 in preferred stock dividends. After taking care of these additional charges, however, there remained a balance after the payment of preferred stock dividends of \$1,637,710.02, or \$477,399.90 more than during the same period of 1920.

The Company's Plants and Properties Account at July 31st, 1921, stood at \$174,891,171, an increase since January 1st, 1920 of \$20,836,967, representing cash cost of additions, betterments and improvements during the period covered by the above comparison.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - EDITOR-IN-CHIEF
FREDERICK S. MYRTLE - - - MANAGING EDITOR
A. F. HOCKENBEAMER - - - BUSINESS MANAGER

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EDITORIAL

Recent announcements of a drop in price of various commodities and classes of merchandise appear to have given fresh impetus to the campaign of harassment directed against the public utilities. All over the country public utility commissions are being importuned to decrease rates for public service, upon the theory that a general drop in prices has materially reduced costs of operation, maintenance and construction.

It need not be stated here that the arguments used in many of these demands are specious, if not wholly false. An attempt is being made to pull the wool over the eyes of the public, so to speak, and to induce forgetfulness of the fact that the utilities' rates did not advance in anything like proportion to general commodity prices during the period when the profits from almost every other kind of enterprise soared skyward. Even the farmer, whose voice has been heard upon this public utility rate question, has for years enjoyed almost undreamed-of prosperity. The utilities, of course, have been held down to the percentage basis of rate fixing laid down for them by the regulating bodies of their respective States. Unlike the private commercial enterprises, they have not been permitted to earn profits out of all proportion to their investments; the utmost

allowed them has been sufficient increase upon previous existing rates to enable them to earn what the public utility commissions have deemed a reasonable rate of return after allowing for costs of operation, maintenance and depreciation, taxes and other matters that are entered in the column against gross earnings.

The public utility commissions are composed of men appointed to investigate all details concerning the conduct of the public utilities, impartially as well as scientifically, and to render decisions upon these rate questions and others with justice to all concerned and not in the interest of any one individual or set of individuals. But, as often observed before in these columns, it would appear that the only kind of regulation the political agitator, or corporation-baiter, has any confidence in is a system of regulation downward, regardless of facts, conditions or principles.

Just how long the apparently never-ending cry of "privately-owned" is to be hurled against the utilities, choked down the throats of the people and digested by a certain proportion of them, no man can say. Why cannot the people understand that the privately owned utility is a misnomer, that there exists no such thing, that the public utility is publicly owned in every sense of the word?

In view of existing conditions it is good to learn that customer ownership of public utilities is increasing in favor throughout the land. Mr. John F. Gilchrist, vice-president of the Commonwealth Edison Company of Chicago, recently made a canvass of forty of the largest electric utilities in the country, serving in excess of 13,000,000 people. He found that of 2,500,000 customers of these utilities, 119,000 were owners of public utilities' securities, and that of that number nearly 90,000 invested their savings in those securities since the close of the late war. Ownership of the utilities by its customers has increased the number of stockholders in the communities served more than fourfold since the war, the total number of shares of stock sold by the forty companies to consumers being in excess of one million shares.

This showing should go far to convince people that utility securities, notwithstanding the efforts of the political agitator, are generally regarded as sound investment.

Some interesting figures upon the power record in California have been compiled by Mr. Robert L. Eltringham, manager of the California Electrical Co-operative Campaign. He gives these to the public in an article entitled "Electricity Vitalizing Growth." In the course of this he informs his readers that the two biggest power companies having their headquarters in San Francisco represent an investment in plants of \$50,255,696, that they have an annual payroll of \$13,418,759, and that they employ, altogether, more than 11,000 persons. These two companies last year generated 1,757,076,188 kilowatt hours of electric power, a volume of energy capable of performing work which would require 5,856,920 men to duplicate.

Last year there was transmitted to San Francisco an aggregate of 181,465,910 kilowatt hours of hydro-electric energy, which conserved 907,320 barrels of oil that would be required to perform a similar amount of energy by the steam-generation process, a saving in money of approximately \$1,587,810.

Mr. Martin J. Insull, who recently retired from the presidency of the National Electric Light Association, announced in an address that the aggregate investment in the electric industry of America, plants and equipment, stood at five billions of dollars, and he thought this amount would have to be doubled in the next few years to meet the ever-increasing demand for power. These figures attracted the notice of the statisticians, who now offer the following picture of what five billion dollars really represents:

It would build 600,000 homes, at a cost of \$5000 apiece, and leave enough over to purchase an electric fan for every family in the country whose house is wired, to buy all the baseball tickets sold during the last ten years by both the National and American leagues, to pay for the Panama canal, to purchase a freight train 100 miles long at a cost of \$200 per foot, to build 1000 hospitals at a cost of \$100,000 apiece, to buy the entire state of Connecticut at a cost of \$50 per acre, to construct a road from San Francisco to New York at a cost of \$25,000 per mile, and to buy 1000 submarines for the navy at a cost of \$1,000,000 apiece.

Five billion dollars! This is the sum that the experts of the electrical industry say must be expended during the next five years for the necessary electric-generating equipment and transmission

and distributing systems, with all the necessary appurtenances, to give the service expected to be demanded by the public. It means an expenditure of nearly \$3,000,000 per day, or \$125,000 every hour, for the next five years.

This vast sum must be raised by securing new money from the investors of America who lend money and buy stocks. Elsewhere in this issue of *Pacific Service Magazine* this problem of public service financing is dealt with by our company's president, Mr. W. E. Creed. Mr. Creed is a great believer in the future of the public utility. He realizes, however, that certain fundamental conditions must exist before the prospective investor can feel sufficient confidence in the undertaking to induce him to become a partner in it. In order that those fundamental conditions may be established the public must be made aware of all there is to know concerning the public service. Though complete mutual understanding, with the confidence which that understanding will inspire, alone can the public utility and the public it serves walk hand-in-hand along the pathway of general prosperity.

NOT WITHOUT SOUL

(From the Los Angeles "Express," issue of August 4, 1921)

Persons who accustom themselves to think of a great service corporation as a soulless and conscienceless monster, with interests necessarily and wholly at cross purposes with the public interest, will do well to ponder over the fact that one Los Angeles corporation has considerably more than 17,000 citizen stockholders.

Indiscriminate and unintelligent condemnation of the modern corporation, as such, is as foolish, and also as futile, as the indiscriminate and wholesale condemnation of men of a given nationality or calling.

There are soulless corporations, as there are irresponsible and soulless men. Nevertheless the corporation is a very needful and very useful phase of modern industrial life. To indiscriminately condemn an institution essential to our development is to lose all moral perspective and sense of proportion.

A thing is not criminal merely because it is big. We have been learning that in America. Big things have their temptations and tendencies to the misuse of power. But success isn't a crime. Let's be sane in our judgment.

In Memoriam

**Dr. Robert Patek, surgeon for this company in San Francisco,
passed from this life Thursday, August 25th.**

Death came unexpectedly. Stricken at his office desk, unconsciousness for two days in a hospital, and then the end. A brain hemorrhage it was, a breaking of blood vessels that had been weak since childhood, following a severe throat infection at five years of age.

Dr. Patek was born and reared in San Francisco. He was graduated from the University of California and later from the Johns Hopkins University in Baltimore, from which he took his degree in medicine in 1906. He was a pupil of the famous "Osler" and under the inspiration of that great teacher spent a year in European and New York hospitals before returning to San Francisco to enter upon the practice of his profession. Once in practice he specialized in surgery and for a time was a surgeon in the city emergency hospital. In 1914 he became surgeon for this company, continuing in that service until the war came on when he entered the army as a captain in the Medical Corps. At the end of the war he went to Boston, where he spent nearly a year in special study in the hospitals connected with the Harvard Medical School, in order to better fit himself for bone surgery in which he hoped to specialize.

On his return to San Francisco he again took up the company's surgical work in connection with his general practice, and was making a fine reputation for skill and learning when he was carried away. He was only 40 years old.

At his funeral Judge M. T. Dooling of the United States District Court, who had known him since early manhood and who was pleased to call him at once both doctor and friend, paid this beautiful tribute to his memory:

"From his early manhood I have watched his progress with ever-increasing confidence and pride. A conscientious and intelligent student of his chosen profession, we, who knew him know that in it he was skilled beyond his years. He was, indeed, just coming to his own; and had he lived he would undoubtedly have ranked among the best.

"A quiet, unpretending but sincere patriot, when his country needed him he promptly and cheerfully responded to her call. In civic affairs he was always ranged upon the side of decency and right, and in his untimely death his city, his state and his country have lost a citizen of such character as in these days can be but ill spared.

"In all the intimate relations of his life his standards were the same. A devoted son, an affectionate brother, a loving husband and a faithful friend, we are all better for having known him, for having clasped his hand, if only for a moment in passing over icy ways.

"Not in the morning of his early youth, nor in the twilight of declining years, but in the full meridian of manhood's power he has gone to his reward. Why this should be we cannot understand, yet must we bow to God's omnipotent decree.

"But this we know—that our affections and our hopes will not be buried altogether in the dust to which shall come these poor remains of frail mortality. For recognizing that the soul is not of this earth, we hear the voice of hope issuing from the grave—we see immortality leading the way before death.

"This is our triumph in affliction; for every one from whom a dearer than himself has passed from view, in the holiest chamber of his thoughts and beneath the impassive front that he presents to all the world, will cherish the hope which is as knowledge that beyond the grave is life eternal. Earthly science has its vast domain in which it triumphs and subdues. But beyond the circle of its widening achievements and beyond the measured limits of certainty lie the unbound realms of faith. Passing all comfort that human lips can offer—balm to the afflicted heart—solace to the oppressed with grief—benediction to the widowed and the orphaned and to all that mourn, is the blessed assurance that death is not the end but the beginning—the transition by which the liberated soul proclaims its immortality.

"In that assurance, Faithful Friend, Wise Counsellor, Cheerful Comrade, Ave Valeque—hoil and farewell."

J. P. C.

Tidings From Territorial Divisions

East Bay Division

The boosters of Hayward, one of East Bay Division's growing suburban towns, staged a three-day Farm Product show during the month. This was the third annual display and was witnessed by thousands who were afforded an opportunity of becoming acquainted with the growth and productivity of that section.

The Lloyd Manufacturing Company, one of our new industries, capitalized at \$100,000, is about ready to open up. This concern will manufacture and distribute, nationally, the Lloyd shock absorber, which has been used so successfully on heavy trucks in the Coalinga oil fields. Mr. Lloyd states he selected Oakland as the place to build his factory because he considered it the best place in the west to manufacture, to distribute and to develop foreign trade.

The Durant Motor Company of California has purchased a site on the north side of Fourteenth St., at 105th Ave. for the erection of its Oakland plant. The company has already made arrangements for trackage connections and work will be begun at an early date. The main building will have a frontage of 600 feet, with three wings, each 400 feet. The investment in land, building and equipment will run over one million dollars.

The Oakland Machinery Company has leased the Remillard building on the south side of Third Street, between Clay and Jefferson. The building is to be remodeled and operations will start immediately.

The farmers of this State, in leasing the Oakland terminal grain elevators, will point the nose of every ear of grain in California to Oakland. California barley for European export has for years been shipped by rail to Galveston, thence by ship to Europe. The action of the farmers of California in taking over these Oakland grain elevators means that ultimately all the grain of California exported to Europe will be shipped direct from Oakland and from these terminal

elevators. The farmers of this State are revolutionizing the handling of grain, from sack to bulk handling. This means a minimum saving of \$16 per ton on the 30,000,000 bushels of barley raised in California annually. The action of the farmers in leasing these elevators is resulting in the formation of an Oakland grain and produce exchange which will make Oakland the grain center of the West.

The Edward Hooper Creamery Company now located in San Francisco, has purchased property on the south side of 17th Street, between Campbell and Willow Streets, and will build immediately, lot 50 x 160 feet.

The Tunison Motor Car Company has secured a shop at 5432 East 14th Street. This is a forerunner to the big factory.

Needless to say, in all the foregoing enterprises "Pacific Service" will play a part.

A new cafeteria has been added to Oakland's list of public eating places. It is located downstairs in the Federal building, Sixteenth and Broadway, with the main entrance on the latter thoroughfare. It is called the Federal. The owners are C. A. Luedeking and C. V. Keenan, well known successful business men in this city. Mrs. M. Lavine is the manager. Many interesting and convenient features have been arranged by A. Reinhold Denke, the architect. His many years of experience in planning and equipping some of the large cafeterias in the West have resulted in a thorough knowledge of just what is required.

Gas fuel is used throughout the kitchen. This saves considerable space and, also, eliminates uncomfortable heat and noise in the kitchen. The food is cooked on a French type 3-oven syphon burner range. Pastry is baked in a modern 3-shelved tiled bottom range. The hot water is furnished in connection with a water back on gas range and storage system, connected to a Bryant automatic heater. This furnishes abundance of hot water at minimum cost. Other appliances include a Salamander broiler and griddle, also a modern toaster where the heat is

applied to both sides of the bread, giving a uniform color without turning, several industrial burners under bain-marie, dish washing machine, and serving tables.

The dining room is a restful place, with its soft indirect lighting and delicately tinted walls. It can comfortably accommodate two hundred. It is a place in which you can relax when you dine. A modern steam table fitted with white tile and German silver assures absolute cleanliness. It has every convenience for keeping the food fresh and warm, while above the table vents have been arranged to carry off all steam, hot air and food odors.

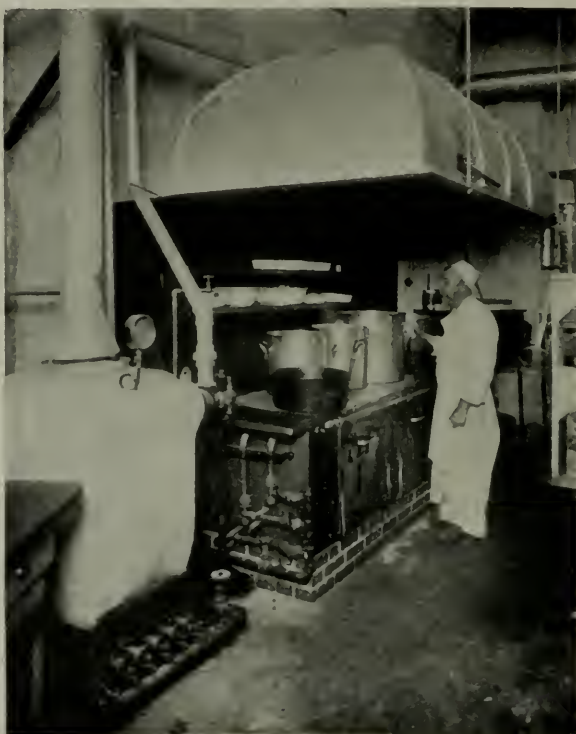
But the most interesting quarter of this eating place is the kitchen, with its many labor-saving devices planned for sanitary and rapid service. Chef George Steck, with thirty years' experience, is in charge of the culinary department, at the head of many expert cooks and pastry makers; and the food is all prepared from first class material. White help is employed throughout the establishment.

A comfortable rest room, including writing tables and telephone booths, has been equipped for women.

Electricity for cooking has won another booster in Mrs. Vaughn, 5201 Calaveras Avenue, Oakland. At her store and restaurant an electric range and waffle iron have been installed. Delicious waffles can be baked at the rate of one minute

for the students of Mills College who patronize this electric kitchen.

The "Lorraine" controlled gas oven continues to prove its practicability and usefulness during the canning season. Mrs. De Puy, 954 Orduay Street, with a "Lorraine" labor saving attachment simply fills the quart pint jars with halved peaches, pours over hot syrup, sets her gas oven for 250 degrees, adjusts the can lids loosely and places them in the oven for one hour, after which remove, seal and the job is done.



Kitchen in the Federal Cafeteria, Oakland.

Inquiries are being made in increasing number for electric water heating devices. Mrs. Farnsworth, premier demonstrator, reports that practically all electric range users who have no electric water heaters are getting in the market for this additional equipment.

The Hydraulic Pipe Company has moved into its new factory at 5th and Dwight way, Berkeley. This firm manufactures a new type of screw joint reinforced concrete pipe. This product is

water and air tight for pressures up to 125 pounds per square inch. The manufacturers claim life-time wear for their product.

The Rex confectionery and bakery, Bancroft and Shattuck, Berkeley, is enlarging its place of business. Pies and cakes will be added to its line of tasty goods and a 9 k. w. electric oven has been installed to handle the baking.

Albany Engineering Works, proposes to erect a large factory on Fleming point,

Berkeley. It will manufacture electric specialties, dredgers and hydraulic machinery. The initial power installation will consist of 100 hp. in motors. The firm plans, however, an ultimate load of 1000 hp.

The first induction type of electrically operated brass melting furnace to be used in the East Bay Division is now under construction. This installation promises to be the entering wedge for the utilization of electricity on a large scale for brass melting. The furnace will be of a size the ordinary small brass foundry can use to advantage and promises to sell at a reasonable price.

The shop size gas fired steam generators are gaining in popularity among the automobile shop men. Two automobile painting shops have installed them during the past month. The new unit is also being applied to steam pressing machines.

Lloyd Manufacturing Company, Oakland's new industry in automobile shock absorbers, is completing a gas fired japanning oven for finishing its product.

Hotel Shattuck, the famous college city caravansary, continues to add to its gas kitchen equipment. Gas in its pastry oven is the latest. Four section of hotel range (gas) and two broilers (gas) are in daily use.

The following may be of interest as showing that "service" is always appreciated.

Oakland, August 4, 1921.

Mr. Elmer G. Still, Clerk,
Board of Trustees,
Livermore, Calif.

Dear Sir:

This will acknowledge receipt of your letter of July 28th thanking this Company on behalf of the Board of Trustees of the Town of Livermore for co-operation of this Company in allowing its office to be used as a ladies rest room during the celebration on July 2d, 3d and 4th.

On behalf of this Company I am very pleased to say that it is ready and willing at all times to co-operate with the various communities it serves in any reasonable way that it can.

We shall be glad to be of service to the Board of Trustees of your Town in the future as in the past.

Very truly yours,
Lee H. Newbert,
Division Manager.

Miss Myra Carey, senior exchange operator at Thirteenth and Clay, announced in the early spring that she would sever her connections with the Company along in mid-summer. That regretful day came on July 31st. However, before her departure, she was afforded a double surprise by her many friends in the East Bay section. A dinner attended by all of the employees on the first floor, some thirty in number, was given in her honor at the Peerless Cafe on July 29th. This was a complete surprise and enjoyed by all present.

At the conclusion of the dinner, Mr. L. H. Newbert arose and brought forth a beautiful loving cup percolator, inscribed, "To Myra from her Associates of Pacific Service, July 29th, 1921." This he handed to "Little Johnny" Clement, who on behalf of the employees of the East Bay Division, with words most appropriate made the presentation.

E. B. D.

❖ Sacramento Division

It has been discovered that it was the Bank of Italy that put the "sack" in Sacramento. Well it has been needed and it is quite a boost to this end of the world that the same organization has bought out the Rideout banking system, including the banks at Marysville, Wheatland, Live Oak, Gridley and Oroville.

There is a splendid plan under consideration to relieve the very bad condition of our roads leading out of Sacramento to the north. At present there is a miserable trestle, with a road bed of twenty feet, to accommodate all the traffic from the north. This includes the Lincoln highway, the Marysville and Natomas roads and the State highway to the Oregon line. This means thousands of vehicles daily. To make conditions worse, there are two railway grade crossings in less than one half mile. The new plan is to construct a steel and concrete viaduct that shall be carried from the end of the American river bridge at sufficient elevation to pass above the present railway crossings. The road bed to be at least thirty feet wide, perhaps fifty feet. This is one of the improvements that certainly are required to put our road system into proper shape. While on the road question it may be of interest to note that the contracts have finally been let to complete the highway on the East levees of the Sacramento river.

It is with sincere regret that we are compelled to chronicle the fact that one of our most efficient and popular employees has resigned to accept more lucrative employment. We refer to Mrs. Georgia Little, who has served for many years at our collection counter. We are certainly going to miss her and it will be very hard to fill her vacancy with as capable an employee. "Good-bye, Georgie, good luck to you and all your family. may you live long and prosper."

Mr. Florence and family are taking a well earned vacation. Somewhere the fish are calling and Ed could not resist the call of the wild—if fish are wild!

The regular vacation season is upon us and our forces are scattered to the four winds of heaven. We hear of them at the most unexpected places. Many are reported as endeavoring to join the Max Sennett forces at the beaches, others are trying to give the Pit river forces pointers on how to construct dams, etc.

New industries of this section that are attracting a great deal of attention are the automobile stages and the automobile trucks. We have at least one dozen stage lines running from Sacramento. Their destinations are as far east as Tahoe, north to Chico, south to Los Angeles and southwest to San Francisco and Oakland. And they are being patronized, too.

There is no real union depot, yet, for their coaches, although there are eight different lines that start from one point. The shipment of freight by trucks has assumed such proportions that a union depot for them has been established at Front and R streets. Freight to the amount of over sixty tons per day is shipped to Placerville, Woodland, Lincoln, Elk Grove, Wheatland and Vallejo and to way stations.

Both the passenger and freight business are assuming such proportions that the railway companies are feeling it, with the removal of quite a number of trains per day. The auto stages that are being installed are really beautiful cars, up to the minute. This business is only in its infancy, but it is surely some bouncing baby already!

The State Fair is nearly upon us again, and from all indications is going to be the best we have ever had. A great many counties have engaged space and the exhibits promise to be very fine. This is

a work in which all California should unite against, not the common enemy, but the great army of people who do not but should live in California. No matter what part of the State they finally determine to locate, it doesn't make any difference, so long as it is California. Let's make our State Fair a State Fair in fact as well as in name. We feel that this condition will obtain, eventually, why not now? Come along, people, we are ready to give you a real "hot time"—and generally do in September.

THE CAPTAIN.

Colgate Division

The following appeared recently in the "Marysville Appeal." It should be of interest to all "Pacific Service" employees who enjoy seeing the efforts of their co-workers appreciated:

INSIDE STUFF

By P. T. BUCK

ED. JOHNSON

When public service companies are busy in a town, they very frequently are cussed in language rich and brown. The citizens complain about the thickness of the bills, they criticize the service as a source of sundry ills, they write the daily papers and the city council too, suggesting what the company should be compelled to do.

But if you asked in Marysville you'd likely hear it said that there is nothing wrong with anything that's run by Ed. He manages P. G. & E. and makes his district think that everything is up to snuff and nothing on the blink, that gas and electricity and power and everything are just the kind that we would ask our Santa Claus to bring.

He mingles widely in the clubs where cronies congregate and is a local influence of consequence and weight. He is an Elk and Mason, a Rotarian et al, and Marysville regards him as a brother and a pal. He often hunts and fishes when the sign is in the sky, and game which Eddie goes to get is always due to die.

The purchase of the Rideout banks of California by the Bank of Italy has attracted considerable interest in Colgate Division towns. The Rideout banks of Marysville, Live Oak and Gridley, the

Farmers bank of Wheatland and the Rideout Smith national bank of Oroville are included in the purchase, increasing the Bank of Italy's resources by approximately \$8,500,000.

The Rideout bank of Marysville was founded in the early '50s. It was not known by its present name until 1861, when it was purchased by N. D. Rideout, a pioneer in California banking. Rideout later established the Rideout-Smith bank in Oroville and during the past three decades branches of the Marysville institution were established at Gridley and Live Oak. The Farmers bank of Wheatland was acquired during recent years.

The sale is considered important as the Bank of Italy is one of the strongest organizations in the West and is reaching into new territory every year. A branch was recently established in Sacramento.

The personnel of the Rideout banks will remain the same as in the past, it is announced.

Six and a half cents for prunes was the initial price paid this season, according to Colusa reports where the sale of some 200 tons by a Sacramento canning company was consummated recently. According to growers the price was better than they had expected, for they were uncertain at that time what the season might bring forth.

The first carload of Zinfandel grapes to be shipped from California this season left Williams, Colusa County, for eastern markets. The average price for the grapes is reported to have been \$75 per ton.

Yuba County generally has taken considerable interest in the advertisement printed in California papers by the Pacific Gas & Electric Company giving a brief history of Colgate Power House. Development of hydro-electric power has been closely linked with the development of town and county.

One of the historic landmarks of the Sierra Nevada foothills, namely the Walling Hotel at Rough and Ready in Nevada County, a few miles from the Yuba County line, has been sold by W. B. Proven to Mrs. Agnes Hurtt. Early in the fifties the hotel was purchased by a man named Downey who previously had bought the hostelry which at that time was not considered a new building. Records of the

year in which the hotel was built have been lost.

The town of Grimes was threatened with destruction by fire recently when a large barn burned and cinders were driven before a high wind toward the mercantile section of the town. Other buildings were saved by excellent work on the part of volunteer firemen.

Self preservation is one of the prime instincts of human nature, and Mr. Lee Fou Low, of Marysville, is very much human. He has written the following letter to Colgate Division headquarters and thereby hangs a tale of much bloodshed during a recent tong battle which stirred the Sacramento Valley:

Marysville, Cal.,

August 22.

Gentlemen:

Dear Sirs:

This is to inform you that on account of the tong war I am at present in jail and I would consider it a favor if you would not cut off the gas at my house at 103 C street, as I will be out as soon as the trouble is over.

Lee Fou Low.

Colgate Division territory has been somewhat inconvenienced by the removal from operation of several important local trains serving rural territory. Marysville, Oroville, Yuba City, Knights Landing and Colusa are among the towns affected.

FARWELL BROWN.

Shasta Division

The Shasta Zinc & Copper Company's new smelter at Bully Hill is in full operation. About 100 tons of ore goes through the smelter every 24 hours, producing 30 tons of zinc oxide, and copper matte as a by-product. The smelter smoke is passed through a bag-house containing 1480 woolen bags, which retain practically all poisonous gasses and dust, also producing by-products, such as arsenic and sulphur for sulphuric acid.

There are 29 motors ranging from 1 h. p. to 300 h. p., aggregating all told, about 905 h. p., all depending on "Pacific Service" twenty-four hours per day. To date there have been about 600 tons of zinc oxide in their warehouse, all pro-

duced at the smelter since it started up in June. It has been found that the zinc oxide is not quite pure or white enough for use in making paint, necessarily requiring refining, so a small experimental refinery, called a pilot plant, has been refining 2 tons of zinc oxide per day, very satisfactory in respect to market grade. At present construction is under way of a large refinery to take care of the entire output.

This concern is about the only one actively engaged in operating mines or smelters in Shasta County. Col. J. C. Jackling, the well known mining capitalist, is at the head of the concern.

The Redding Chamber of Commerce is bending all efforts to bring to Redding a creosoting concern which is looking for a good location. It is understood that this concern has plants elsewhere and supplies our company and others with creosoted products. Furthermore, it means the employment of about 15 men and a sure demand for "Pacific Service."

The best news French Gulch, an old mining town west of Redding, has had for a long time is the word that the Hazel Gold Mining Co. has given an option on the Gladstone mine to a San Francisco concern. Operations will begin August 12th. The Gladstone mine is Shasta County's most famous quartz gold mine. It opened in the early '90s and had always been a steady producer. In 1916 it was shut down due to increased costs of operation. It will draw on "Pacific Service" for 100 or more h. p.

Word is at hand that Hat Creek No. 2 is ready to be put on the line whenever the line is completed. It will deliver 10,000 h. p. like its sister plant No. 1. The operating personnel has been selected, all having had previous experience. It is understood that the construction of bungalows is under way for the housing of the operators. Fortunately, there will be a number of shovels left whereby the boys can get on the heavy end of it three months out of a year to keep an open path here and there when snow gets 10 feet deep. Some life, eh!

B. W. G.

The following newsy communication comes to us from the Pit River territory:

Cassel, Shasta Co.,
August 11, 1921.

Editor,
Pacific Service Magazine.

Dear Ed:

We employees of the Mt. Shasta Power Corporation, located up in this neck of the woods, have been receiving regularly and reading with interest the Pacific Service Magazine, and we want to tell you that we think it is one of the greatest little employees publications ever gotten out. Not only does it keep one in touch with the activities of the system, but it creates a feeling of loyalty and a desire to co-operate. We at Cassel have not occupied much space in your columns, but that is due more to oversight in furnishing news on our part than anything else. It is to rectify this and to let the rest of Pacific Service know that we are very much alive that I am writing to you.

Back in January a small body of employees here held a meeting in what we call out guest tent, and organized a club, naming it Paga Elco, derived from the first two letters in each word of Pacific Gas and Electric Company. Away from town and amusements as we are, we have to provide our own; and it was for the purpose of injecting a little social life into the monotony of camp existence that the club was formed. At the start we were handicapped by the fact that there were only six women in camp; but if any other six can divide their attention among one hundred men as did these I'd like to see 'em. Six men under similar circumstances would have been completely, totally lost.

At first our get-togethers consisted mainly of card parties, with refreshments on the side, and impromptu dancing,—though with only six ladies the man who got more than one dance in an evening was lucky. Our music was coaxed from a dilapidated piano of ancient vintage, which we had been fortunate enough to secure from a nearby rancher.

With the coming of spring, and consequent arrival of more families, our membership grew so large that we found it necessary to have a clubhouse (officials who have visited us know how small is our guest tent) and accordingly a large tent was erected and in it a dance floor laid. From then on we might have been in the city, for entertainments and dances were the rule rather than the exception. A lively interest was taken in amateur plays and performances, several of

which were given with a success that served to create an ever increasing interest in the club. We had by now acquired a drummer, two banjoists and a saxophone player, and we "shook our feet" to as jazzy strains as ever issued from a San Francisco Dance Emporium. Our dances became the talk of the County, and we had only to "noise it around" that the P. G. & E. were holding a dance to have the entire female population within twenty miles present. And a real country dance, with natural decorations of spruce and fir branches and wild flowers strung around the hall (provided, of course, the music is good, and ours can't be beat) has a conventional city dance backed off the map—even if we do have to cut our own confetti from newspaper and use an automobile reflector for the spotlight dance.

Not long after the snow had disappeared the boys were out on the lot tossing the ball, and by June we had a team organized that would give most semi-pro outfits a run for their money. To prove it, we have cleaned up on every team in this vicinity with whom we could arrange a game, and now are in the position of having no one to play. We are not disguising the fact that we are looking city-wards—and the Head Office team may consider this a challenge to a game whenever and wherever it can be opportunely arranged.

Although Hat Creek Powerhouse No. 1 is practically completed, we are looking forward to our occupation of Pit River Camp No. One with anticipations of just as jolly a time as we have had here; for Paga Elco has by now become a by-word, an institution of the Mt. Shasta Corporation. And in the future we expect to be not only alive, but to let the rest of the System know about it by appearing regularly and frequently in the columns of Pacific Service.

With best wishes for the success of "Pacific Service," the Paga Elco Club wishes to express its feeling of friendship and camaraderie to all of its members.

Very sincerely yours,

The Secretary.

San Joaquin Division

The old employees of this district were happily surprised on July 18th by the return to Stockton of Mr. and Mrs. Floyd J. Smith, who have been in Bay City, Michigan, the past two years. Mr. Smith

was formerly accountant in the Stockton office and was called East on account of the death of his father in 1919. His old friends and associates in the general construction department, line division and other districts of the System where he was so well known will be glad to learn that he and his charming wife have returned to the Golden State for keeps.

Stockton has selected a piece of property adjacent to Dorrington, Calaveras County, for a municipal campsite for 1921. It is becoming very popular for the various towns in the two valleys to secure grounds in the High Sierras and provide accommodations and camping facilities for their citizens. Sacramento has done wonders along this line and Stockton has made up her mind to run a close second. Camps conducted as is the Sacramento camp are putting vacations on the map for people who before could not afford a trip into our scenic wonderland to the east of the San Joaquin and Sacramento valley.

A new irrigation district is being formed on the West Side, to be known as the Banta-Carbona District, which will put under irrigation 18,500 acres of very productive land. To supply this district with 21-2 acre feet of water per season will require the installation of nine pumping plants ranging from 125 h. p. to 800 h. p. and totalling 4125 h. p. "Pacific Service" will be used to the extent of approximately 4,500,000 kwh per month as soon as the full acreage is put in shape for water.

Work on the new Masonic Temple in Stockton is well under way. The contracting firm of McDonald and Kahn has the contract on the building, which will cost when completed and furnished about \$450,000.

The Stockton City Council is seriously considering the purchase of the Stockton mineral baths property as a recreation center. The general arrangements and the architecture of the baths are admitted to be the last word in the building art. The various designs are a result of an exhaustive study made of the architecture of practically all the watering places in the United States and Europe. It will be a serious mistake if the city does not take advantage of this opportunity to acquire this fourteen acres of property.

Ground has been broken for the construction of a \$65,000 three-story office building by the Pacific Telephone & Telegraph Company in Modesto. The contract has been awarded to Munson Bros. of San Francisco, the builders of the San Francisco City Hall. The first floor of the building, according to present plans, will house the commercial department of the company, the second floor the plant department, and the third floor the operating department. The building is to be constructed so that another story may be added later, if conditions justify it.

The Modesto Rotary Club was recently honored by the presence of Mr. John A. Britton at one of its meetings. Mr. Britton spoke most fittingly on "The Relation of the Public Utilities to the Future of California."

The sad death here of Harold "Bud" Coffee, the aviator, on July 14th, was a severe shock to Modesto and its inhabitants. The fatal aeroplane carrying the hero and three passengers crashed through the Patterson-Newman 60,000 volt line, the Maze 17 kv line and one of the 2300 volt feeders, near the west city limits, causing a few minutes interruption. Before the damage to these lines had been repaired word was sent in that two of the transformers at the Valley Ice Company's substation had burned out, due to overload. Three 200 kva transformers were rushed from San Francisco by truck, arriving at Modesto at 10:30 that night, and the line and service crews worked until 4:00 on the morning of the 15th, when the new transformers were put in service. Truly it was a most strenuous twenty-four hours for "Pacific Service."

❖ San Francisco Division

Recently our Division Manager had occasion to write on the subject of "Co-operation" and as such a topic is always of general interest to all employees the following is given:

"When a suggestion is offered by a member of one department to one of another it should not be considered as an encroachment upon the rights of that individual, or against the department, as the case may be, but rather should be taken in the spirit in which the suggestion is offered and looked upon as a co-operative matter.

"As we are all desirous of overcoming difficulties and improving our service, very often the fellow looking on can make suggestions that are good and timely and which the man who is continually living with them may be inclined to overlook, and if we hope to obtain the greatest results this can only be accomplished by all being open-minded in all matters affecting the service. Without the co-operation of each and every employee we would be unable to live up to the company's slogan of 'Pacific Service'."

"SERVICE, COURTEOUS AND CONTINUOUS"

You see that slogan wherever you see the Pacific Gas and Electric Emblem. It applies to every public utility and especially ours as it has been adopted as our own.

Perhaps some of you do not realize that everyone in the Gas Generation Department has his part to perform in the rendering of this Service. Every fireman in the boiler room helping to keep the steam pressure up where it belongs is helping to turn the blower engines over at the proper speed so that the men in the compressor room may maintain the pressure on the city mains at the correct gauge.

This is given simply as an illustration. Think about it and know that all of us are working for the "one big thing," SERVICE. When you go home after your day's work you will have the satisfaction of knowing that you have done your part to render to others the biggest and best thing you can give, honest Service.

J. M. DICKEY.

August 1, 1921, Miss B. J. Dale was transferred from the Division Manager's Office to the Personnel Department. While we sincerely regret Miss Dale leaving the Division we are very glad to hear of this promotion and we all wish her success in her new field of action.

COURTESY ALWAYS WINS

The following letter from Mr. Murphy to Mr. Oldis contains a message worth heeding:

"Yesterday we had occasion to forward to W. T. Cole, 116 Frederick Street, Apt. 45, a corrected bill for service dating from May 17 to July 18, and today in talking over the telephone he took occasion to thank the writer for the prompt manner in which his request was complied with.

"It seems that Mr. Cole received bills for service dating from March 17, and subsequently from April 17, but he objected to paying these because he did not move into the premises until May 19 and did not propose to be saddled with any charges for service incurred by another tenant. He called this matter to our attention several times, so he says, but no attention seems to have been paid to it until on the evening of Monday, August 8, when he called the office about 5:15 P. M. This call was switched for some reason or other to your department, and Miss O'Connor happened to take the call. In talking to Mr. Cole this morning he called my particular attention to the fact that whereas he was incensed because apparently his requests had not received any attention, nevertheless Miss O'Connor was tactful and courteous, and he had nothing but words of praise for the manner in which his complaint was handled by her.

"It pleased us so much to hear this that we concluded to pass it along to you for your information and suggest that same be called to the attention of Miss O'Connor."

A new Westinghouse 1500 k. w. booster type rotary converter of the latest design has just been installed at Station "I" to handle the additional load in the downtown section.

Two new direct current feeders are being installed out of Station "I" to handle the load of the Granada Theatre, at the corner of Market and Jones streets, and at the States Theatre on the corner of Market and Taylor streets.

The new six-mile duct line from Martin Station to Station "I" has just been completed. The two 500,000 c. m. 11,000-volt, 3-phase lead cables, which will be installed in the duct line will bring hydro-electric power direct to the heart of San Francisco.

A. U. B.

HEAD OFFICE

The following communication to our Mr. John A. Britton is from the sales agent for California of a large heating and manufacturing concern in Seattle. It contains an appreciated tribute to "Pacific Service."

Dear Mr. Britton:

I have had occasion to visit various departments of your company recently in search of information on different sub-

jects, and I wish to express my appreciation of the uniform courtesy and disposition to be of service which I have met, on the part not only of the heads of departments but of all the subordinates with whom I have come in contact.

This attitude, which unfortunately does not characterize all public service corporations, reflects great credit upon you and upon the organization which you have built up, and I congratulate you accordingly.

I am, Very truly yours,

O. W. Forsyth.

Mr. E. A. McCallum, of the gas engineering department, and Miss Marian Crosbie, of Berkeley, were married in that town on July 30th. Mr. McCallum has been with the company some four or five years and has made many friends who will be interested to hear of the event. His bride is a relative of Dr. B. M. Rastall, the well known industrial expert who has been connected with the Chamber of Commerce in this capacity for some time past.

After having spent a honeymoon in Lake and Mendocino counties Mr. and Mrs. McCallum are now comfortably settled in an apartment in San Francisco. "Pacific Service" is very glad to extend hearty good wishes to the young couple.

North Bay Division

The following shows that "Pacific Service" has its admirers in Marin county:

Sausalito, Aug. 22, 1921.

Pacific Gas and Electric Co.,

Dear Sirs:

I really owe the company many thanks for the efficient way all the needs of both electric range and water heater have been attended to in all the four years I have used them. I did indeed realize there were no charges made for maintenance, so satisfactory have all the dealings been. I am asking you to send information to Mrs. Finn, 129 Central Ave. They are building a new bungalow on San Carlos Ave., Sausalito. I recommend a water heater like the one you put in for me. Will you kindly send some one to call upon her at 129 Central Ave., Sausalito.

Yours very sincerely,

(Signed) (Mrs. W. D.) M. B. Claussen.

Water Company Bonds

are sure-footed investments

WATER COMPANY BONDS are dependable investments because the business of supplying water to stable communities is about the most dependable of all business activities.

The very nature of the business is such that operating expenses do not fluctuate widely. Taxes may vary slightly and the cost of fuel for pumping may vary slightly.

But the principal element in the cost of supplying water is the investment in property for impounding, purifying and distributing water.

To a basically dependable business in California the investor should add the stabilizing power of Railroad Commission supervision. Assuming a fair capitalization and satisfactory service, earnings vary in the same proportion as expenses. Thus the investor is always assured of an earning power adequate to meet all charges and a proper balance for surplus reserves.

This is why Water Company bonds represent the very highest type of public service corporation securities. This is why Water Company bonds are sure-footed investments.

And this is why we unhesitatingly recommend your investment in EAST BAY WATER COMPANY Unifying and Refunding Mortgage 7½% Gold Bonds at 100 to pay you 7½%. Are you in position to take advantage of this offering? Then call on us in person or let us call on you in person and discuss this matter.

BLYTH, WITTER & Co.

MERCHANTS EXCHANGE

SAN FRANCISCO

OAKLAND OFFICE: EASTON BUILDING

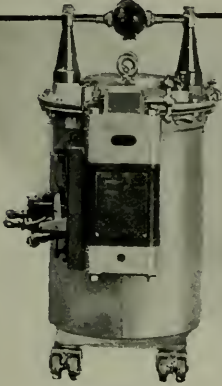
New York

Seattle

Portland

Los Angeles

Moisture in even the minutest quantities seriously affects the dielectric value of insulating oil and greatly reduces the safety factors of electrical apparatus.



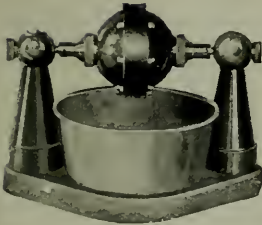
30000-volt Oil and
Insulation Testing
Set.



G-E Portable Oil Testing Set.
Auto-Control Transformer
and Spark Gap.



Close up view of
Oil Testing Spark
Gap for portable
set



Standard Oil Testing Spark Gap
with Micrometer Adjustment
Insulating Stand and Tray.

What would you say?

If the manufacturers should arbitrarily lower the safety factors of oil insulated apparatus by reducing the A. I. E. E. standard high potential tests even 10%?

A vigorous protest would no doubt be made.

Yet, after this apparatus has been placed in service, its factors of safety may be reduced 30% to 50% by moisture entering the insulating oil.

The only way to offset this condition is by regularly testing the oil.

Have you a G-E Oil Testing Outfit in your plant?

Secure Copies of bulletins 69707 and 69901 listing and describing the complete line of G-E Oil Testing Equipment.

General Electric
General Office
Schenectady, N.Y. **Company** Sales Offices in
all large cities

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Established 1869

C. D. STEIGER, Secretary

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OCCIDENTAL FOUNDRY

Successors to Steiger & Kerr

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Machinery, Railroad, Architectural Castings, Bell and
Spigot Castings for Gas and Water Mains, Flange Fittings
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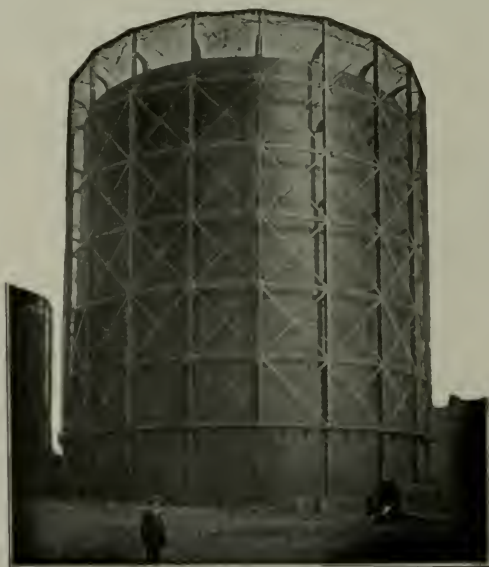
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For House, Hotel and Apartments.

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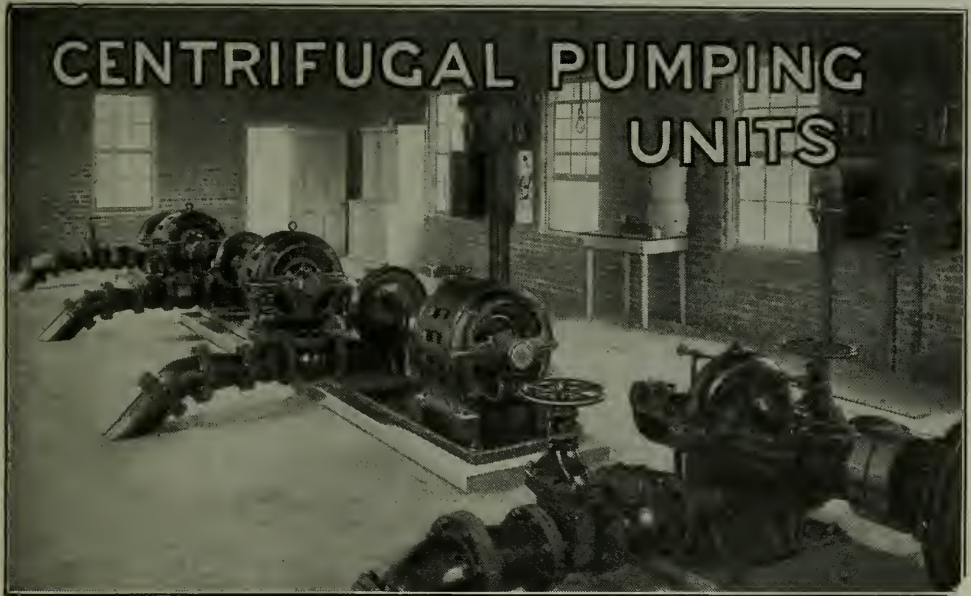
TELEPHONE MISSION 250



R. D. Wood & Co.

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MILWAUKEE, WISC.

District Office: Rialto Bldg, San Francisco, Calif.

Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

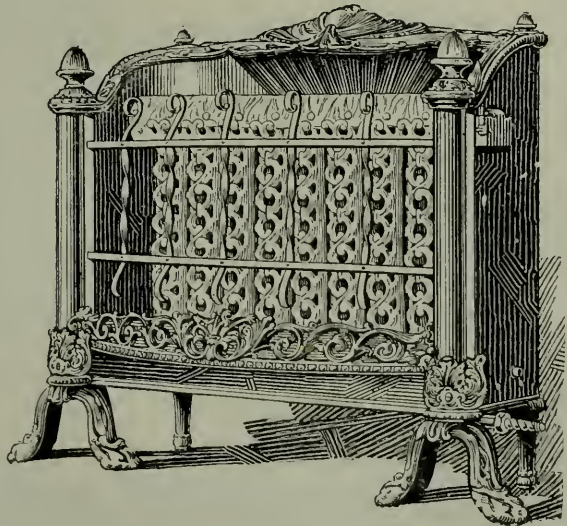
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

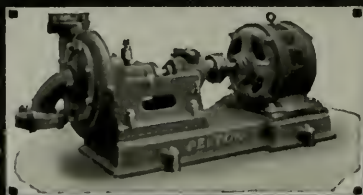
IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California

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PROMPT SHIPMENTS OF
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PUMPS

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Write our nearest office for Bulletin 680

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Seattle Los Angeles Salt Lake City
Factory in Oakland, Cal.



**The Fulton Gas Pressure Governors
For Artificial or Natural Gas**

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

Chaplin-Fulton Manufacturing Co.
PITTSBURGH, PA.

336 BK Nickel Trimmed with Warming Oven



**A Combination
Gas Range**

**THAT PERMITS OF EVERY
SELLING ARGUMENT**

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

Jas. Graham Mfg. Co.

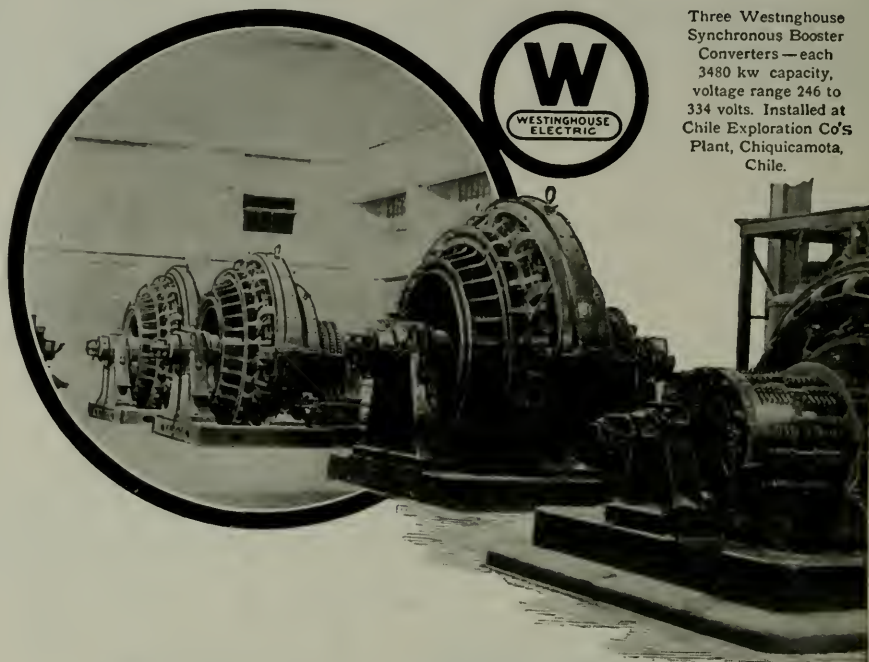
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Wedgewood
QUALITY SERVICE FUEL ECONOMY

Gas
Ranges
and
Appli-
ances

WESTINGHOUSE SUB-STATION EQUIPMENT



Three Westinghouse Synchronous Booster Converters — each 3480 kw capacity, voltage range 246 to 334 volts. Installed at Chile Exploration Co's Plant, Chiquicamota, Chile.

Westinghouse converters are extensively used for practically all substation requirements.

They are of rugged construction and thoroughly dependable where continuous and uninterrupted service is essential for 24 hours per day and 365 days per year.

Their efficiency is high over the wide voltage range often required in many types of service. Commutation is excellent under all load conditions.

Westinghouse Electric can also supply complete sub-station equipment.

WESTINGHOUSE ELECTRIC & MFG. CO.

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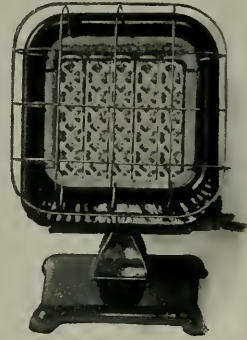
Los Angeles, Seventh and Spring Sts.

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The HUMPHREY Radiantfire

The No. 10 Portable meets the demand for bath room heat, the average bath room not being equipped with a permanent heating appliance.

The Portable has the same perfect features that characterize the larger type Humphrey Radiantfire.



GENERAL GAS LIGHT COMPANY

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of San Francisco

*Invites you to use its fully
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A Willing, generous service, cheerful in spirit—helpful by strength and conservative when necessary to maintain that strength.

It Is our purpose to render a service that will demonstrate our sincere interest in the financial welfare of our customers and other friends.

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Pacific Gas and Electric Company Furnishes

"PACIFIC SERVICE"

TO OVER 579,900 CONSUMERS OF

GAS • ELECTRICITY • WATER • STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

DIRECTLY			INDIRECTLY			TOTAL	
	No.	POPULATION		No.	POPULATION	No.	POPULATION
Electricity.....	171	1,120,503		60	153,449	231	1,273,952
Gas.....	56	1,127,009		2	8,600	58	1,135,609
Water (Domestic).....	18	61,719		8	15,488	26	77,207
Railway.....	1	65,908				1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
¹ Alameda.....	28,806	¹ El Verano.....	400	Meridian.....	200	² San Leandro...	5,703
¹ Albany.....	2,462	¹ Emeryville.....	2,390	¹ Millbrae.....	300	² San Lorenzo...	500
¹ Alvarado.....	1,000	Escalon.....	600	Mills.....	400	² San Martin....	250
Alviso.....	517	Esposito.....	200	Mill Valley....	2,554	² San Mateo.....	5,979
¹ Amador City..	377	¹ Fairfax.....	250	Milpitas.....	300	² San Pablo.....	500
Anderson.....	750	Fairfield.....	1,008	Mission San		² San Quentin...	3,000
Angel Island..	500	Fair Oaks.....	300	Jose.....	500	² San Rafael....	5,512
Antioch.....	1,936	Fall River Mills	300	Modesto.....	9,241	² Santa Clara....	5,220
¹ Aptos.....	300	Farmington....	300	Mokelumne Hill	900	² Santa Cruz....	10,917
Arbuckle.....	900	Felton.....	300	Monterey.....	5,479	² Santa Rosa....	8,758
¹ Atherton.....	500	Folsom.....	2,000	² Morgan Hill..	646	Saratoga.....	500
¹ Auburn.....	2,289	² Forestville....	250	Mountain View	1,888	Sausalito.....	2,790
¹ Barber.....	500	Fresno.....	45,086	Mt. Eden.....	200	² Sebastopol....	1,493
¹ Belmont.....	375	² Gilroy.....	2,862	² Napa.....	6,757	Shasta.....	200
Belvedere.....	616	² Glen Ellen....	1,000	² Nevada City... ¹	1,782	² Shellyville....	200
Benicia.....	2,693	² Gonzales.....	500	Newark.....	500	Sheridan.....	250
¹ Ben Lomond... ¹	400	² Grass Valley.. ¹	4,006	² Newcastle....	750	Smartsville....	300
¹ Berkeley.....	56,036	² Gridley.....	1,636	Newman.....	1,251	² Soledad.....	400
Biggs.....	683	Grimes.....	500	Niles.....	1,000	² Soquel.....	400
Bolinas.....	200	² Groveland....	500	² Novato.....	400	² Sonoma.....	801
Brentwood....	400	² Guerneville..	800	Oakdale.....	1,745	² Sonoma.....	1,684
¹ Broderick....	700	Hamilton City..	250	² Oakland.....	216,261	² South San....	
¹ Burlingame... ¹	4,107	Hammonton....	500	Oakley.....	200	Francisco.....	4,411
Byron.....	350	² Hayward.....	3,487	² Occidental....	600	Standard.....	500
Campbell.....	600	² Hercules.....	373	Orland.....	1,582	² Stanford Uni-	
¹ Capitola.....	300	² Hillsborough..	931	Orville.....	3,340	versity.....	2,700
Carmel.....	638	² Hollister.....	2,781	² Pacheco.....	300	² Stockton.....	40,296
Cement.....	1,000	Honcut.....	500	² Pacific Grove..	2,974	Suisun.....	769
Centerville... ¹	1,000	Hughson.....	250	² Palo Alto.....	5,900	Sunol.....	350
Ceres.....	637	² Ione.....	1,000	Paradise.....	500	Sunnyvale....	1,675
¹ Chico.....	9,339	Irvington.....	1,000	Patterson.....	694	Sutter City....	250
¹ Colfax.....	573	² Jackson.....	1,601	² Penn Grove....	200	² Sutter Creek... ¹	920
¹ College City.. ¹	250	² Jamestown....	750	² Penryn.....	250	Tehama City... ¹	196
Collinsville... ¹	200	Kennett.....	464	Perkins.....	300	Tiburon.....	400
² Colma.....	1,500	² Kentfield....	500	² Petaluma.....	6,226	Tracy.....	2,450
² Columbia.....	200	Kenwood.....	300	² Piedmont.....	4,282	² Tres Pinos....	300
² Colusa.....	1,846	Keswick.....	200	² Pike City.....	200	² Tuolumne....	1,500
Concord.....	912	² King City....	1,048	² Pinole.....	967	Turlock.....	3,394
Cordelia.....	300	² Knights Ferry	200	² Pittsburg.....	4,715	² Vacaville.....	1,254
Corning.....	1,449	Knights Land-		² Pleasanton....	991	² Vallejo.....	21,107
Corte Madera.. ¹	607	ing.....	400	Port Costa....	900	Vina.....	300
² Cotati.....	200	² La Grange....	200	Princeton.....	300	² Vineburg.....	200
Cottonwood... ¹	500	² Larkspur.....	612	² Red Bluff.....	3,104	Walnut Creek.. ¹	538
Coyote.....	200	Lathrop.....	600	² Redding.....	2,962	Warm Springs.. ¹	200
Crockett.....	1,500	Lewiston.....	200	² Redwood City..	4,020	Waterford....	250
Crow's Landing	300	² Lincoln.....	1,325	² Richmond.....	16,843	² Watsonville... ¹	5,013
² Daly City.....	3,779	Live Stock....	300	Rio Vista.....	1,104	Wheatland....	435
Danville.....	400	² Livermore....	1,916	Ripon.....	500	Williams.....	650
Davenport.... ¹	300	² Lomita Park..	600	Riverbank.....	200	² Willows.....	2,190
² Davis.....	939	² Lorena.....	500	² Rocklin.....	643	Winters.....	903
Decoto.....	300	² Los Altos....	500	² Rodeo.....	300	² Woodland....	4,147
² Del Monte....	300	² Los Gatos....	2,317	² Roseville.....	4,477	Woodside.....	300
Denair.....	200	² Los Molinos..	200	² Ross.....	727	Yolo.....	350
Dixon.....	926	Madison.....	300	² Sacramento....	65,908	² Yuba City.....	1,708
² Drytown.....	200	Manteca.....	1,286	² Salinas.....	4,308	Total Cities	
² Duncan's Mills	200	² Mare Island..	600	² San Andreas... ¹	1,183	and Towns... ¹	1,347,844
Durham.....	250	² Martinez....	3,858	² San Anselmo... ¹	2,475	Add Suburban	
² Dutch Flat... ¹	750	² Marysville....	5,461	² San Bruno....	1,562	Population... ¹	368,115
² Eldridge.....	500	Maxwell.....	500	² San Francisco..	506,676	Total Popula-	
² El Cerrito.... ¹	1,505	Mayfield.....	1,127	² San Jose.....	39,642	tion Served... ¹	1,715,959
Elmira.....	350	² Menlo Park... ¹	900	² San Juan.....	350		

Unmarked—Electricity only.

¹—Gas only.

²—Gas and Electricity.

¹—Gas, Electricity and Water.

²—Gas, Elect. and St. Railways.

³—Electricity and Water.

⁴—Electricity supplied through other companies.

⁵—Gas supplied through other companies.

⁶—Water supplied through other companies.

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In the year 1920, over twelve billion feet of gas were manufactured in the Company's twenty gas plants. This was sent through 3,006 miles of gas mains to 286,542 consumers in 58 cities and towns, serving a population of 1,100,000.

Operates 25 Hydro-Electric Power Plants.

Operates 4 Steam-Electric Power Plants.

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BONDS

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PRESS OF
H. S. CROCKER CO., INC.
SAN FRANCISCO

PACIFIC SERVICE MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



SKETCH OF PIT RIVER No. 1 DEVELOPMENT AND COMMUNITY CENTER, AS PLANNED

Vol.
13

SEPTEMBER 1921

No.
4

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WEST SIDE DIVISION	H. B. HERYFORD	Red Bluff
Willows District	CLIFFORD BARTLETT	Willows
Red Bluff District	CHAS. HUGHES	Red Bluff

Pacific Service Magazine

Volume XIII



Number 4

Yearly Subscription \$1.50 \ Single Copies, Each 15 Cents

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"Pacifle Service" Club House on the banks of the Pit River, from a sketch by Architect Frickstad.

The Proposed Community Center at Pit River No. 1 Development

By IVAN C. FRICKSTAD, Architectural Assistant, Department of Engineering.

The Pit River power project, now familiar to our readers and focusing the interest of the general public as well as the technical world, has many by-way interests connected with it, one of which is the proper housing of the men with their families who are to operate the plant throughout the twelve months of the year.

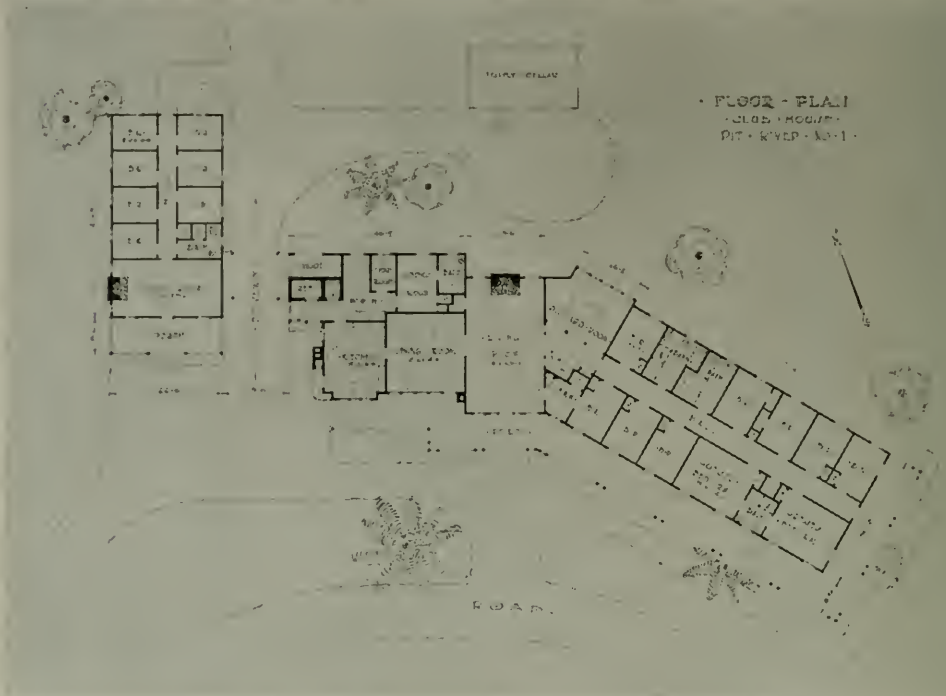
The Pit River No. 1 plant is the largest in course of construction and when completed will require between fourteen and eighteen men to operate it, a proportion of whom will be men with families, so that the community can easily consist of from thirty to forty people. The location of this plant in the very heart of the Cascades, seventy miles east of Redding, and midway between Mt. Lassen and Mt. Shasta, in the wooded lava region of rugged mountains and beautiful valleys and meadows with streams flowing full and strong, makes it a beautiful spot to be isolated in, but one in which it is necessary to anticipate the needs of those who are to dwell there, so that, whatever the time of the year, their welfare is assured.

The power house itself is at the foot of a mountain on a slightly sloping stretch. Back from the river about one thousand feet, this slightly sloping stretch continues both ways from the power house north and south and is quite heavily wooded with pines and oaks. It is on this slope by the river that "Pacific Service" is preparing to establish a community center for the accommodation not only of residents but, also, of other members of our "Pacific Service" family whose duties, from time to time, may call for a sojourn at Pit No. 1.

This community center has been located, to the north, on the high side of the road which crosses the tailrace and continues on over the saddleback to Fall River Mills. It is at the base of the mountain, in the midst of these large pines and oaks, a setting which could hardly be improved upon. It consists of one large club house in which it is proposed to take care of all single men, guests, and work crews; six cottages for the men with families, four of these having four rooms and two having five rooms, a large



Front elevation of club house at proposed Pit No. 1 Community Center.



Floor plan of the club house at Pit No. 1 Community Center.

garage, and a warehouse in which will be located the postoffice.

Their location has been studied in reference to the power house so that they will be convenient in distance and yet far enough removed to form a unit in themselves. The warehouse and garage have been placed at the intersection of the road which passes through the plant to Fall River Mills and the railroad, which is a point midway between the community center and the power house itself. This being the center of all incoming and outgoing vehicles, mail, and supplies, will be found convenient to both the community center and power house requirements.

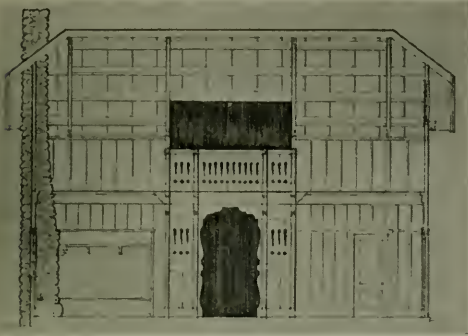
The club house will be the central building of this community and,

also, the center of all social activity of four power plants within a few miles radius, consisting of Hat Creek Nos. 1 and 2, and Pit River Nos. 1 and 2. It has received special attention in its planning and design so that it fits the contours and is framed in by certain large pines with oak trees to the sides and in the background.

In plan the building consists of a central portion and two wings. In the center portion are located the living room, billiard room and dining room, with the accompanying kitchen, cold storage and store room equipment. The east wing contains the bed rooms for the operators and two large guest chambers and rotates 30° south to give as much sun as possible to all bed rooms. The west



Fireplace in living room of club house.



Balcony in club house living room.

wing is the portion to be occupied by working crews who may come in from time to time, having a large living room, individual bed rooms and porch. The attic space in the east wing is also

designed after the Swiss chalet type which perhaps harmonizes better than any other with the natural surroundings. It receives its charm and inviting appearance from the large wood-burning fireplace flanked by roomy window seats and book shelves, as well as from a balcony over the central stairway which forms a most interesting feature overlooking, as it does, both the living room and the billiard room, and providing an ideal location for the musicians when special social gatherings are arranged for.

Social activities will adapt themselves readily to the layout of the living, dining and billiard rooms, because, in addition to performing their individual functions,



Types of operators' cottages. The one at the left is a five-room structure, the other two four rooms.

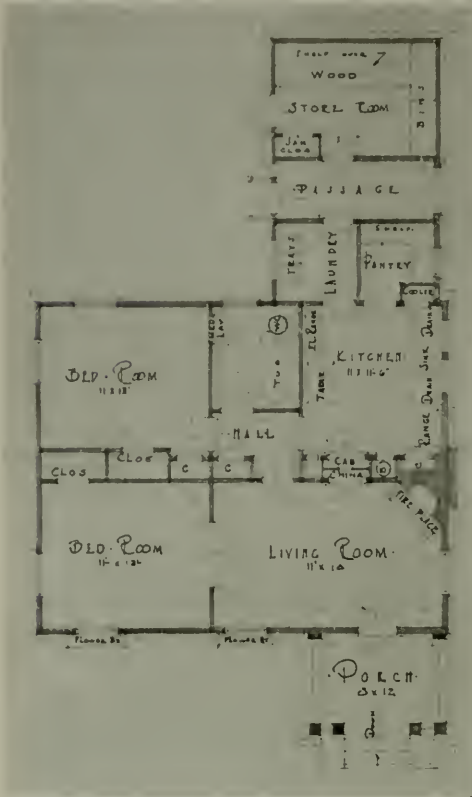
so arranged that it can be used in emergencies for parties coming in who could not otherwise be accommodated in the number of rooms provided. An open wood-burning fireplace has been placed in each living room.

The building has been designed to set low and near the ground, and rock gathered from the site will be utilized for all foundations, with rustic material for the exterior covering of the superstructure. Cedar logs will be used for the porch posts and the outside walls will be covered with split cedar shakes. The interior of the living, dining and billiard rooms will be finished entirely in native woods, with an open roof construction showing the exposed roof trusses, and rafters with burlap covering between. The living room has been

these three rooms can be combined into one large floor area forming a most ideal nucleus for the community center. This feature of the club house, it is felt, will prove a vital factor in solving the problem of what to do with the leisure hours, preventing them from becoming irksome in the semi-isolation of these plants, and should contribute very largely to the



Interior of cottage living room.



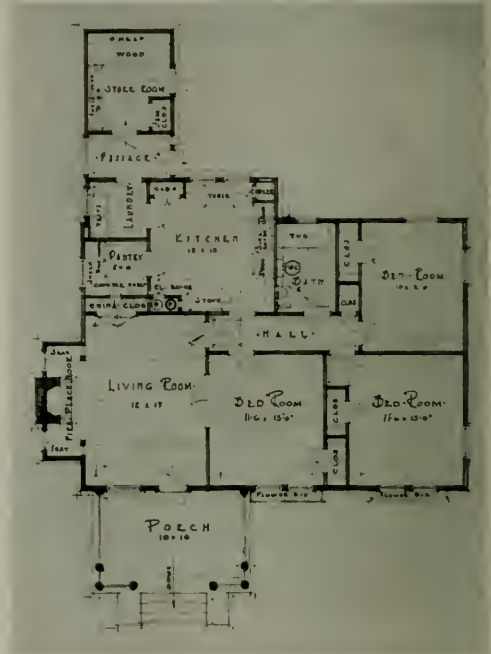
Floor plan of four-room cottage.

development of a wholesome and friendly community spirit.

Considerable study has been given the cottages to provide ample room and equipment for the families that will be required to live in this region, and they have been designed in the same style as the club house, using the native rock for foundations and combinations of rustic exterior coverings, so that each cottage will possess an individuality of

its own. The living rooms of these cottages will be finished similar to the living room of the club house, and each will contain an open fireplace.

The appointments of both the club house and the cottages, such as kitchen sink, bath room fixtures and laundry, will be similar to those in our modern city cottages. The plan, as illustrated, shows



Floor plan of five-room cottage.

the general arrangement as described of the complete plan, with roads and paths developed according to the natural circulation and contour, yet on artistic lines. The water, fire protection, sewer and lighting systems are all indicated on this plan, so that, when complete, there will

be nothing lacking in the way of modern and necessary conveniences to make living on the part of these people as delightful and safe as possible.



Barn attached to Community Center. Side and front elevations.

In connection with this, attention might be called to the club house equipment which includes a complete cold storage plant. In addition to the refrigeration needed at the club house, ice will be manufactured to supply the needs of the families of the community center and, also, the families residing at our other power plants on the Pit River system, namely, Hat Creek Nos. 1 and 2 and, possibly, Pit No. 2, when built.

Recreation has likewise been given thought, and provision is made in an area of ground in front of the club house

for such games as all concerned would be likely to indulge in, the present suggested games being tennis, croquet, horse-shoe and bowling. Other games may, however, be installed in place of or in addition to these, as may prove desirable.

When completed and occupied, this community center at Pit Power House No. 1 will present a very beautiful appearance, situated as it is among the pines and oaks in the heart of these mountains, the cottages themselves being stained in subdued shades and tones of buffs, greens, and reds, so all will be in harmony.

Have Only One Revenue Source

(From "My Business" "Your Business" and "Our Business," a hand book published by Illinois Committee on Public Utility Information, Chicago, Illinois.)

The utilities have but one source of revenue. That is the rates received for their services. If these rates are not adequate, if they are not enough to pay the costs of operation and maintenance plus a return to the owners, the stockholders, that is sufficiently liberal to attract capital, the growth and extension of these properties cannot go on; they are crippled by impaired credit. Then their service begins to deteriorate and goes from bad to worse; and when that happens, it is the community, deprived of service, that suffers most. Hence it is the extreme of short-sightedness when a community—no matter what the nature of the impelling motive—forces its utilities into circumstances that impair its credit.

The United States is not a "Christmas tree." We get what we pay for, and we expect pay in return for our labors or the commodities we have to offer. A grocer, dry goods man, doctor or what not, expects a just return for his labors. He fixes what he thinks that return should be—his business is not regulated—and if he doesn't get it he closes up shop and goes into some other line of business.

A worker expects a fair wage. If he doesn't get it he quits and takes another job.

A thrifty man or woman, who through denial saves part of his or her earnings and invests them, expects a good rate of interest for the use of his or her funds which make possible benefits for all of the people. If they don't get it, they won't lend.

Every business has to pay the prevailing market price for any materials it uses or the prevailing scale of wages to employees. If it doesn't it gets neither. They go to some other industry where they will receive their price.

The utility industry can buy no cheaper than can any other, whether the commodity be coal, oil, steel, iron, copper, wood or the many other products that enter into production of electricity, gas, transportation or communication. It must pay its workers the "market" price, for of all industries its employees must be efficient and satisfied.

But, unlike other businesses, the utility cannot fix its own selling prices; its rates are fixed by some outside authority. Hence it is to the interest of a community that its utilities be treated with utmost fairness, lest its utility service be damaged.

Carrying on "Pacific Service"---Vaca Substation

By HECTOR KEESLING, Assistant Engineer, General Construction Department.



Architect's sketch of the Vaca Substation, now in process of construction.

The first substation to be constructed for 220,000-volt operation anywhere in the world is being built by "Pacific Service," on a ninety-acre tract fronting on the State Highway between Vacaville and Sacramento, four and one-half miles northeast of Vacaville.

This substation, to be known as the Vaca Substation, is the present terminal of the Pit 220,000-volt transmission lines and serves a dual purpose:

(a) To transform the Pit River Power from 220,000 volts to 110,000 volts so that it may be distributed to the cities and regions bordering San Francisco Bay.

(b) To regulate the voltage of the power received and thereby secure the most economical transmission and the best service.

The main substation building, designed in an adaptation of the Spanish renaissance, consists of a main front portion 42' 8" by 128' 0" in plan, one story high, with a rear wing 38' 2" x 91', two stories high. The front of the building will house two 20,000 K.V.A. 11,000-volt, 3-phase, 60-cycle, 60 R.P.M. horizontal revolving field synchronous condensers with direct connected exciters. This main condenser room extends 38' 3" from the floor level to the bottom of the roof trusses.

The 11,000-volt bus structures and switching devices are housed on the first floor of the rear wing, while the second floor will include the point of control for all equipment and will contain, in addition to the switchboard, a store room, telephone booth, and lavatory.

This floor is reached by two flights of ornamental iron stairs leading directly to the floor level of the main building. Another flight of stairs in the rear end of the building leads down to the level of the outdoor bus structure. The operator is able to get a good view of the condenser room from the office balcony and can also see the exterior bus, the oil and the air switches.

The building is a steel and reinforced concrete structure with Spanish tile roofing, and an outside finish of light buff plaster. The predominating exterior feature on the front of the building consists of a semi-circular niche with an ornamental cast cement emblem overhead and framed with an ornamental lattice border. This niche extends inside the face of the building about 5' 6" and has a plate glass enclosure extending up from the platform level and terminating in a plate glass dome. Circular cement steps will form the approach to the enclosure from which the public will be able to obtain a good view of the interior of the station.

Large circular head windows will furnish light to the interior and add to the general exterior appearance of the building. Skylights will admit light to the office, store room and operating deck.

The main transformers, high tension oil switches, high tension air switches and high tension busses will be installed outdoors. This equipment comprises: Seven 16,667 K.V.A. single phase, oil insulated, water cooled, auto transformers, 220,000-volt high tension to 100,000-volt low tension with tertiary winding for 11,000 volts for synchronous condensers and with tap for operating at 160,000 volts. One of these transformers is to be held as a spare. There will be a seven section 110,000-volt double bus structure, with disconnecting switches, seven 110,000-volt oil switches, and three 220,000-volt oil switches. Each oil switch will be provided with by-pass and disconnecting switches.

The transmission line connections will include two circuits, each 201.5 miles long, from the Pit No. 1 powerhouse and made up of 27.7 miles of 518,000 circular mil steel core aluminum cable and 173.8 miles of 500,000 circular mil copper cable. There will also be an incoming and outgoing circuit connecting to the 110,000-volt Drum-Cordelia line of 3/0 copper cable, and two circuits to the Claremont substation, Oakland, made of 250,000 circular mil copper.

There will be eight cottages for accommodating the operators, a large garage and a separate building housing the pumping plant for cooling water and domestic uses.

An artistic cooling pond with fountain will be located immediately in front of the building giving a very pleasing appearance to the substation setting.

It will be the largest and most important substation on the "Pacific Service" system and one of the largest substations in the world.

All of the equipment will be of the most modern design. All the switches will be mounted on fireproof steel construction.

Gross shipping wt. of each syn. condenser, 221,800 lbs.

Heaviest piece, rotor with shaft, 103,675 lbs.

A traveling crane inside the substation building will handle this equipment and will also handle the transformer parts, since the transformers can be rolled into the building over standard gauge tracks provided.

Heavy equipment will be hauled over dirt roads from Hartley, about 3 miles from substation site, thus keeping off the Highway.

Sand for concrete is procurable on the substation lot from bottom of washes; gravel is obtainable from creeks in near vicinity.

The project will cost about \$1,250,000.

A model camp for 100 men engaged in constructing the station has been built. This camp is of a semi-permanent nature made up of frame buildings of surfaced lumber and painted, with the view of leaving it available for enlarging the substation in another five years.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION



Messrs. Creed and Britton at the picnic.

Our Association's annual picnic and outing was held at Fairfax Park, near San Rafael, on Saturday, August 13th. It was the first occasion for Marin County to be so honored and, needless to say, the selection of the occasion was a triumph for North Bay division, whose genial manager and his associates worked like beavers in co-operation with the various picnic committees to make the affair the unqualified success it was.

It is not unusual for Marin County to enjoy gorgeous weather during the summer months, and the day of days was quite up to form in this respect, so that it was not surprising to hear that upwards of 1500 persons passed through the gates and spent a most delightful day in a spot that is more than favored by nature. It was a basket picnic and members brought their families. Every section of our "Pacific Service" territory was adequately represented, and there were but a few absentees among the division managers. President Creed, ac-

companied by Mrs. Creed, and General Manager John A. Britton were early arrivals. With an unusually good representation from head office departments as well as territorial divisions, it may be said that the outing was in every respect a "Pacific Service" family affair.

There were good things to eat, and fortunate was the unattached visitor who enjoyed sufficient popularity to be invited to partake of the delicacies on offer at various tables under the spreading trees. There is a spacious dance hall at Fairfax Park, and the young couples footed it merrily from lunch time to eventide. Then, in the adjoining grounds, the usual program of athletic contests was pulled off. In fact, the efforts of the entertainment committee were in evidence from the beginning. Various gate prizes were distributed and those fortunate enough to excel in the various contests staged were generously rewarded.

The transformer installation contest, perhaps, attracted the greatest interest. It was the first in the history of our annual picnics and there was tremen-



View of the transformer installation contest.



Rival gangs working against time.

dous rivalry among the competing teams entered, respectively, by San Francisco, Oakland, Sacramento, San Jose and San Joaquin divisions. Each was confident of carrying off the laurels, and the boys from East Bay division were proud indeed when the Oakland team, under Foreman Huber, was declared the winner. To those but imperfectly acquainted with the technique of transformer installation it was perfectly wonderful to see those men at work, and with almost breathless interest the crowd watched for the sudden glow in the light bulb on the switchboard that gave proof of a job completed. The following teams competed and their official times are here-with given:

Oakland	Team	Foreman	Huber	Time:	17 Min.,	14 Sec.
Sacramento	"	"	Payne	"	19 "	19 "
San Francisco	"	"	Badger	"	20 "	2 "
San Jose	"	"	Davis	"	20 "	50 "
San Joaquin	"	"	Swailor	"	20 "	56 "
Oakland	"	"	Harvey	"	24 "	34 "
Oakland	"	"	Swasey	"	Not reported	

The judges of the contest were: P. M. Downing, A. U. Brandt, E. W. Florence, R. A. Gentis and Jos. Worthington.

The various athletic contests created much amusement. They included the usual races for boys, girls, men and women, varied by wood sawing, nail driving, cracker eating, potato racing and other contests that called for unusual display of energy as well as good nature.

The evening was well advanced before the stampede for home came. Possibly never before in the history of "Pacific Service" has such an array of automobiles been seen outside a picnic ground. The

electric trains were heavily laden and the journey was sufficiently short to allow all within hailing distance of points around San Francisco Bay to reach home in good time.

The following committees had charge of the affair:

General Committee: E. G. McCann, chairman; J. W. Fallon, vice chairman.

Dance and Reception Committee: Paul Pacheco, chairman; Misses Florence Kopp, Alice Dickson, L. Templeman, L. Grosbauer, L. G. Gibson, L. E. Daniels, Lulu Brandt, Edna Koethen, Messrs. Oscar Fish, Lester Kornell, L. Hewelcke, W. A. Bahr, L. J. Peterson, J. J. Meagher, F. Bremer, M. G. Hall, P. B. Hansen, Ralph Evans, C. D. Clark, Chas. McKenzie, A. J. Stephens.

Program Committee: J. W. Fallon, chairman; Misses Florence Kopp, Josephine Koskela, Alice Schmidt, Helen Gee, Florence Mazet, Messrs. W. H. Blamey, H. Creon, Chas. Brown, E. A. Hansen, Richard Kene, R. Borkheim, L. Kopp, C. C. Madsen, E. T. Palmer, C. J. Pierard, A. T. Kelly, Wm. A. LaViolette.

Announcement Committee: A. Reuss, chairman; R. Shaver, F. R. Harris, Wm. Kohloff, A. Spalding, Geo. Streckfus, Chas. Sontag, W. G. Smith.

Lunch Committee: H. G. Ridgway, chairman; Mrs. Nellie Warren, Misses Rhoda O'Connor, Frances Jepsen, Dolores Donnelly, Messrs. Thos. Jamison and O. Fish.

Sports Committee: W. H. Cohick, chairman; P. Sundberg, starter; J. Sauer, M. Anthony, A. C. Hogan, judges of start; H. Creon, Wm. Ward, E. A. Ridgway, judges of finish; R. H. Aver, clerk of course.

Transformer Installation Contest: M. H. Knopf, vice-chairman in charge; P. H. Hillebrand, C. A. Pederson, M. J. Hickey, M. McLian, Bud Rains.



A group of bathers at Stanislaus.



Car ready to start for forebay and flume.

On September 9th, 10th and 11th, San Joaquin Division entertained the Pacific Service Employees' Association at Stanislaus Power House, twenty-three miles east of Sonora, on the Stanislaus River. The road to Stanislaus is very picturesque, leading through the romantic towns of Sonora and Jamestown and the old mining town of Columbia, once having a population of 15,000 and now sheltering but a couple of hundred souls, with its ruined church on the hill and its historic houses, over the Parrotts Ferry grade with its deep pitches and hairpin turns. Many lovely views are caught along this road, beautiful vistas of mountain and valley.

During the course of the afternoon of the 9th, about three hundred guests arrived at the Power House, being welcomed by Mr. Bedgood, our genial superintendent, and a number of capable assistants, including Mr. and Mrs. Gill and Mr. and Mrs. Werry, and spent the time until supper in exploring the camp and investigating the immense power house. By sundown most of the guests had found their way to the camp, which was situated across the river—from the power house, and slightly upstream. Here tents were pitched, tables set for supper, and wood collected for a bonfire. Supper was served at six-thirty by an efficient crew, led by Mr. "Jack" Tulloch of Oakdale, and consisted of mulligan and water-melon s. After supper, yells were given by various departments and districts, and these were followed by

songs around the huge bonfire. After an hour or so thus passed, everybody went down to Camp 9 for the dance, which was held upon an open air pavilion on the edge of the river. Music was furnished by our "Pacific Service" orchestra. At midnight a goodnight supper of weinies and coffee was served on the clubhouse porch. There was little sleep in camp that night, however, for the bonfire was kept up until the wee hours and much noise and merrymaking went on around it.

A baseball game was held next morning after breakfast between East Bay and San Joaquin Divisions. The score, at the end of five innings, stood: East Bay—8, San Joaquin—1. This score was considered very creditable, as the route to first base led downhill, then uphill to second, downhill to third, and uphill again to the home plate, and was interspersed with various hazards in the shape of gopher holes and certain mounds and hillocks at intervals. To cool off after the ball game, the party then adjourned to the swimming pool, which is situated a short distance upstream from the power house, and which is really an ideal swimming hole, the water being very deep and quite still.

At noon the big barbecue was held at tables set in the cool shade on the banks of the river. The meat was buried in the ground over night, and dug up just before the barbecue. This meal was the *piece de resistance* of the culinary department, and was served by a large and distinguished crew, including our Division Manager, Mr. Chas. Northcutt, Mr. Gill, Mr. Werry, Mr. Fagg, and a number of assistants, each and all of whom performed their bits in a most praiseworthy manner.

A program occupied the first part of the afternoon, at which the assemblage was addressed by Mr. A. U. Brandt, Chairman of the P. S. E. A., Mr. F. A. Leach, Jr., Vice-President of the Company, and Mr. W. M. Henderson, who explained the plan and scope of the educational program which is to be put on by the Employees' Association this winter. Mr. J. A. Johnson, Chairman of the San



Charlie Northcutt Dancing



Group of visitors to Stanislaus who stayed till the last.

San Francisco Section, announced the meeting to be held in San Francisco in October, and we were also favored with a very few words by our own Mr. C. R. Gill, Chairman of the San Joaquin Division Section.

At three o'clock an event took place which in my mind was more than worth the whole trip. Through the kindness of the Company, the superintendent of the power house was allowed to spill water on one machine for a few minutes. The water thus spilled, a great flood, was projected directly against the side of the mountain wall opposite the power house, and the water and spray rushed up with a mighty roar to the top of the cliff, a distance of about two thousand feet. It is impossible with mere words and an ordinary human command of expression to do justice to this magnificent picture. The great force of the water, which is about 750 lbs. to the square inch, tore up rocks and masses of debris and hurled them high into the air above the surface of the water. The sun shining on the water and through the spray gilded the scene and made at one side of the monster inverted waterfall a great rainbow liquid with enchanting colors, while scores of spectators on the swinging bridge were literally drenched with spray.

Campfire songs again occupied the hour after supper, after which dancing lasted until midnight, when the weary musicians packed up their instruments and departed for rest. Weiners and coffee were again served and everybody drifted leisurely back to camp under the stars, surrounded by the magic calm and quiet serenity of the forest which is so soothing to nerves set ajangle by the noise and confusion of city life. We

are glad to receive the news that Stanislaus is to be made a vacation camp for the employees of the company, for there are few more beautiful and restful spots in California.

After breakfast the following morning camp was broken and preparations made to bid farewell to the scenes of pleasure. One by one the machines departed bearing away the merry-makers, each and every one of them declaring that the party was the "best ever" and expressing their hearty desire to come again.

M. I. R.

ECHOES OF THE STANISLAUS PARTY

Mr. R. W. Muller of the West Side Division Section made the long trip to Stanislaus to boost the party to be given there in October. We know such boosters as Mr. Muller will make a success of the affair and hope they will have an excellent attendance.

The eating championship was not definitely decided, but Jack Pape and Bill Shuhaw both qualified.

The "ole swimmin' hole" was a popular place. Joe Worthington said he went in at 5:30 A. M.

The P. S. E. A. orchestra entertained the dancers both as to quality and quantity of music, and insured a hearty welcome for themselves the next time they visit the Division.

Ralph Robinson can sing—and did. Once he took charge, the community singing went over big.

Mr. Northcutt acted in the capacity of the "up-town" entertainment committee. He kept things going around the clubhouse and personally conducted several trips up the tramway.

Bill Henderson appeared in regular togs, including his trick hat.

"Safety" Hughes was there, but didn't spend the night up the river, fearing it would be too quiet. He parked near the power house and slept under his automobile.

C. R. G.

The P. S. E. A. picnic held at Olympie Park in Nevada District, September 18th, was a big success, notwithstanding the threatening weather. There were about 400 present, including employees of "Pacific Service," their families and friends. We had representatives from Spaulding, Drum, Alta, Halsey, Wise and Deer Creek power houses; Auburn, New-castle, Loomis, Penryn, Rocklin, Roseville and other places in Drum Division, also Sacramento and Marysville.

The trip to the Empire Mine in the morning was taken advantage of by six autos and one truck load. The guides had a very interesting sheet of facts concerning the mine, and the visitors were surprised at the magnitude of the plant.

At one o'clock a delicious venison stew and hot coffee were served on tables under the pines. The stew was in charge of L. H. Hartsock, Manager of Nevada District, five fine bucks and chickens being used in the preparation.

W. E. Meservey, pioneer water superintendent of Nevada District, had charge of the table arrangements.

Following the stew, boating and swimming occupied the attention of some, while others enjoyed the dance on the large spring platform on the island where a first-class jazz orchestra dispensed the latest music.

During the afternoon a short musical program prepared by Miss Reat Fuller, of the Grass Valley office, was rendered and much enjoyed.

Another attraction was the boxing exhibition given by Leon Belcud, of the Grass Valley force, and Danny Matthews, former amateur champion of the welter-weight class of the Pacific Coast. The contest was four rounds of good boxing. Charles Pearce acted as referee and found it necessary to break the clinches several times. Jack Evans and Chas. Mooser proved proficient in handling the towels, and Dan Stewart of Deer Creek power house acted as timekeeper.

At six o'clock the festivities were brought to a close and the guests started on their return trip home after having voted the first picnic given in Nevada District by the P. S. E. A. a huge success.

DAN C. STEWART,

P. S. E. A. Chairman, Drum Division.

Thursday evening, September 22d, found Jenny Lind Hall, Oakland, filled with a crowd of P. G. and E. people and

their friends. The occasion was Ladies' Night and the hosts were the Gas House Terriers Athletic Club at Station "B."

Through the kindness of Mr. Kearns and Mr. Cushman of the Y. M. C. A. the program was opened with a moving picture of the industrial work which was being done in the East Bay Section. Following the movie came a snappy boxing bout between Al. Rupert and Gerald McCarron. Next came a scholar of Houdini, the hand-cuff king. Mr. Peter Jorgenson was seated in the center of the floor and was tied to a chair. Fifty feet of rope was used and over twenty minutes was taken to securely tie him. From the moment the sheet was thrown over his head until Jorgenson stood clear of his bonds, only eighty seconds had elapsed.

While the wrestling mat was being stretched, Miss Grace Buckingham from the Thirteenth Street office favored the spectators with several vocal selections. Miss Buckingham was accompanied on the piano by Miss Catherine Hurl. The following eight minutes saw a lively wrestling match between Billie Raab and Lee Woodhouse, the first fall being registered in just eight minutes, but not before Raab had sustained a broken nose.

The main event was a bout between Battling Bob Real and Lumberjack Schultz. Hardly had the combatants stepped out of the ring before they were besieged by local prize fight promoters to sign up for the leading bouts at the Auditorium this winter.

One of the prettiest bouts of the evening was a match between Mr. Thorne and Mr. Silvera. Both were exceedingly clever with the gloves. The program closed with two vocal selections by Mr. Rupert and Mr. McCarron. The floor was cleared for dancing and all "tripped the light fantastic" to music furnished by the club's own orchestra, under the leadership of Harry Fledderman.

From the comments heard the next day, it goes to show that the boys from Station "B" certainly can entertain.

H. C. D.

NEPTUNE BEACH

August 27th was play day at Neptune Beach for "Pacific Service" folks and their friends. This was the big day which the East Bay Division had planned and looked forward to with much pleasure.

The day was ideal and hundreds turned out to enjoy the swimming, games and eats. Mack Sennett missed the chance of his life to add to his collection of bathing girls by not being on hand.

There were games of all kinds from pie eating contests to push ball. Besides this every one had free rides on the merry-go-round, scenic railway and other hair-raising concessions.

Everyone was ready to eat at five-thirty and rushed to the cafeteria where supper was served. After plenty of eats the crowd enjoyed dancing in the cozy dance pavilion, the main feature of the evening being a prize waltz.

"Home Sweet Home" was played at eleven o'clock and everyone left after having had a wonderful time all afternoon and evening.

San Francisco was well represented.

Let us have another day at Neptune.

On August 27th the regular meeting of the P. S. E. A., West Side Division, was held at Red Bluff.

The attendance was fair-sized. The meeting was called to order at 9:15 P. M. The usual routine of matters was gone through; the consideration of the organization's new sick benefit plan took up considerable time.

Plans were laid, committees appointed and other details were considered for the division's annual event to be held at Red Bluff on October 15th, the date having been changed from the 22d. All arrangements and the program will be considered more thoroughly at the September meeting.

We had with us Mr. Hugh Flynn from the Hat Creek plants, who gave a very interesting talk concerning possible conditions for P. S. E. A. activities in the construction camps. There were also two lectures from the Bay Divisions. Mr. E. C. Woods spoke on automobiles and their care and Mr. L. H. Tyser on electric meters, using stereopticon views. The meeting closed at midnight.

On August 21st the "Pacific Service" employees of Turlock and La Grange entertained the San Joaquin Division employees at La Grange power house. A basket dinner was served at noon, after which a big

watermelon feed took place. The boys had provided two tons of watermelons and a ton of cantaloupes. This affair was very well attended by the employees of the division, and all spent a very delightful day. The committee in charge of this affair consisted of Messrs. Varain, Nevraumont, Brown, and Thornburg, and they deserve a great deal of praise for the excellent manner in which the affair was handled.

The large attendance of employees at Ebell Hall, Oakland, on the evening of August 9th, proved the popularity of the educational meetings.

The speakers of the evening were Mr. A. U. Brandt and Mr. W. M. Henderson, who spoke on the Educational program. Mr. E. G. McCann spoke on the personnel department. There was a song by Leon Mills. The feature of the evening was a very interesting and inspirational moving picture entitled "Heads Win" gotten out and shown to us by the International Correspondence School. Following the program there was dancing.

A very pleasant Scotch party was given by the Oakland section of the Pacific Service Employees' Association at their last regular meeting, Tuesday evening, September 13th, at Ebell Hall, under the auspices of the Gas Distribution Department. After a welcoming address by Mr. George Kirk, superintendent of mains for the East Bay Division, an entertaining Scotch program of music, singing and fancy dancing was rendered, in



"Pacific Service" bathers at Neptune Beach.

which the "skirl o' the pipes" was not lacking, and during which that trinity of old standbys, "Believe me, if those

endearing young charms," "Comin' thru the rye," and "Annie Laurie," songs that reached our hearts in days gone by, and will continue to reach the hearts of generations yet to come, were very nicely given by our ain "Aggie" and Miss Jackson. The character sketches by Mr. Ballantyne and our "Wullie" were much appreciated, as were the Scotch folk dances by Mr. and Miss Anson. "There's a wee bit land," and "My own United States" by Mr. Todd, and the songs of Mr. Bremner and Mr. Dobbie came in for a generous share of applause. The piper for the evening was Mr. Anson.

A very considerable portion of the credit for the program rendered is due Mr. David Carmichael, a member of the Gas Distribution Department, and also Chieftain of Clan MacDonald, through whose efforts, in co-operation with Clan Fraser, the talent for the evening was secured. At the conclusion of the program the floor was cleared and about 200 couples enjoyed the pleasures of the dance to very able music furnished by the Pacific Service Employees' Association Jazz Orchestra. My very good friend Angus, a braw Scotsman, would like to say a few words in conclusion:

"Waal! Waal! Waal! an we dinnae hae th' gran pairty at th' gatherin' o' th' clans, at the Ebell hoose, I'm naw Scotsman! A' th' braw laddies an' bonnie lassies came frae a' th' toons an' clachans roon about an' haed a gude Scottish tane. There was muckle speakin' o' pieces, an' liltin' o' songs, an' there was steppin' o' daunces tae th' skirlin o' th' pipes. Gin ye dinnae gang, ye shud hae, for let me tellit ye—there was many a gude lauch, an ye was nae oot ocht, nae 'een a bawbee; an' how it brocht back th' days in Bonnie Scotland. There was beg Sandy Welling, as gude and braw a Scotsman as 'eer drinkit a wee drappie of auld kirk, and beg Bell Kelly, the braw laddie as has th' way wi' th' lassies, and young Wully Pape, anither fine Scotch laddie an' he was a prood lad ilka meenit o' th' nicht, an' Tammas Canghy, an' Douglass MacPierce theim as lays doon the pipes i' th' ditch an' Dugald MacKellar anither ain o' th' braw lads. An' the lassies! There was bonnie blackeyed Rose MacShultees, an' Aggie Buckingham, anither Hielan' dochter, an' winsome Elspeth MacNarinian—abobbin' an' a booin' tae every mon camin' frae th' oot-by. Ye might gang a lang tane, an' nae find ither sic bonnie lassies.

Noo I maun tellit ye a joke on Wullie MacOgarty. D' ye kin, Wullie had it a' fixit wi' hees Jean tae breng her tae th' gatherin'; an i' th' gloamin d' ye ken, as he was comin thru the widow MacDoodles rye tae meet th' lassie, th' widow's old rid bull took after heem, and Wullie d' ye ken, had tae gang hame a runnin', an in th' gawin' he rippit hees breeks in the hinmaist part' d' ye ken, an as Wullie has nae ower muckle siller, he had tae borrow a pair o' breeks frae Sandy Welling an' Sandy d' ye ken is nae a wee bit bairn, but a braw laddie buck, an' sae I tellt Wullie tae cut arm holes in the upper pairt o' Sandy's breeks, but he wad nae leesten tae ma, an' ye ken the deil o' a fash he had wi' 'em, fechten 'em aye the tane. Waal I thoct aince he was goin' tae forget tae grab afore they were dune on the flure, an' I noticed some o' the lassies were some fashed as weel. Th' old chief, Mr. Kirk, bids ma say tae ye—'I hope yee'll let naething keepit ye awa' frae th' neixt gatherin o' the clans'."

ANGUS MACSWATT.

At the present writing all the officers of San Francisco section are breathing easier, the whirlwind campaign to determine by vote the most popular young lady of the S. F. Division employees to reign as Queen of our Mardi Gras Ball October 1st was brought to a close September 10th, the ballot box sealed, placed in the vaults in Sutter Street for safe keeping and officially counted at the educational meeting and dancing party held in Native Sons' Hall September 15th, when Miss Elizabeth Cox of the Potrero Plant was officially declared the Queen-elect.

The unlooked for grand total and the close count of the four candidates show the high tension enthusiasm that our membership develops when "tying into" any project.

While this contest was raging the fiercest, we learned that the old sharpshooter Cupid with his bow and arrows scored with the successful candidate, and on September 14th Elizabeth Cox of the Potrero Gas Plant became the Queen in fact of Mr. James Kearny's kingdom. Needless to say our best wishes for their joy and happiness go out to them. Miss Cox that was intends to continue with "Pacific Service."

J. A. JOHNSON,
Chairman S. F. Section.

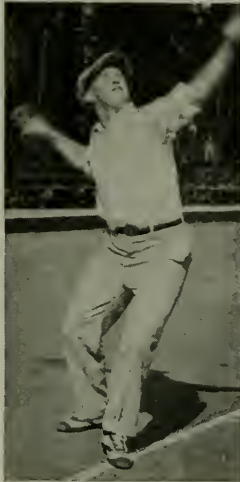
F. S. Benson Wins "Pacific Service" Tennis Tournament

F. S. Benson, of the Department of Engineering, was returned victor in the eleventh annual tennis tournament for the championship of "Pacific Service." This is Benson's second win of this title, as he won the tournament last year, and his victory was well merited by the steady aggressive brand of tennis he displayed.

The tournament was held August 20th and 21st, on the Hotel Rafael Courts in San Rafael. These historic courts have witnessed many keen struggles for tennis supremacy in years gone by, for it was here that McLaughlin, Janes, the Hardy Brothers, Mel Long and many other famous tennis players met in the championship matches. But it is safe to say that as much interest and enthusiasm was displayed regarding the outcome of the Pacific Service championship as ever was shown in any California State championship event.

The courts were in the best of shape and the Hotel Rafael had made special preparations for the players and spectators, all of which added greatly to the enjoyment of the occasion. Light refreshments were served by the hotel management to players and spectators. Numerous prizes were distributed, the winner receiving, in addition to the possession of the cup for a year, a Wrighi and Ditson racquet, while the runner-up was also presented with a racquet and each of the players defeated in the semi-finals was given a pair of tennis shoes.

The entry list numbered twenty-four players registering from all parts of the system, two men, E. Bell and Merritt Cowell, making the 250-mile trip from Redding in order to be present. Several



F. S. Benson, the winner.

of the old standby contingent could not play for various reasons. Fisher, Dodge, and Cowell were on vacations, Lisberger was indisposed, Ed Florence was "busy" at Sacramento, Earl Henley refused to play unless he could meet Florence in the first round, and P. M. Downing was out of town. Nevertheless there was a goodly representation present and the men who missed the tournament were surely out of luck.

A summary of the play by rounds follows:

FIRST ROUND.—V. F. Escourt defeated A. Cleveland, 6-4, 4-6, 6-1; M. Cowell defeated E. J. Beckett, 6-4, 6-2;

F. S. Benson defeated J. H. Parker, 6-1, 6-2; Phil Bibo defeated G. F. Whitworth, 6-1, 6-2. This match was Bibo's first appearance in the Pacific Service event, and the form he displayed made him one of the favorites to win the cup.

SECOND ROUND.—R. H. Aver defeated C. DeWitt 6-3, 4-6, 6-3. As the score indicates this was a ding-dong battle. Aver being slightly the steadier, won out in the third set.

R. A. Monroe defeated B. Hart 6-0, 6-0; Escourt defeated Cowell 6-4, 6-2; Benson defeated C. H. Delaney 6-1, 6-2; Bibo defeated E. Bell 6-1, 6-2; I. C. Steele defeated J. N. Mayfield 6-0, 6-4; W. G. Vincent defeated K. Naismith 6-4, 6-1.

THIRD ROUND.—Monroe defeated Aver 6-0, 6-3; Benson defeated Escourt 6-2, 6-3; Bibo went into the semi-finals by default; Steele won from Vincent 9-7, 4-6, 6-3. This match was one of the most closely contested of the tournament. Steele won the first set after a terrific battle, during the progress of which it was impossible to predict who would win. Vincent's steady



Phil Bibo, the runner-up.



R. A. Monroe, in the semi-finals.

back court game had Steele more than worried, for time after time as he endeavored to gain the net position, Vincent's accurate side line drives would pass him completely. The second set went to Vincent by a narrow margin but it was apparent to the gallery that he was beginning to feel the strain of the match. In the third set Vincent made a game

stand, but Steele's superior condition told and the match was soon finished.

SEMI-FINAL ROUND—In the first match of the semi-finals, Steele, who has twice been the Pacific Service champion, met Bibo. This match was a nip and tuck affair, the play being very fast and both players playing well. Both have good services, Bibo's in particular being so fast at times as to be almost unplayable. The contest was a net battle with the man who was able to obtain this coveted position generally winning the point. Steele led in the first set at 5-3, but dropped the next three games and the set. The second set was a duplication of the first, the pace never slackening for an instant. Again Steele led at 5-3 only to lose the set and match at 7-5.

In the second semi-final match, Monroe, who also has two wins on the cup, met Benson, the victor of last year. They played at the same handicap and the match developed into a long drawn out battle, in which base court driving predominated, neither player being able to take the net without being passed by his opponent. The rallies were long and frequent, each point being bitterly contested, and the advantage of the service generally proved sufficient to win the game. Benson won the first set 6-4 and proved his superiority by duplicating his performance in the second set.

FINAL MATCH—The final match probably witnessed the best tennis ever exhibited in a "Pacific Service" tournament. Benson continued to play his steady base line driving game and Bibo attempted to gain the net at every opportunity. The



Vivien Escourt (right) and Merritt Cowell (left).

first set went to Bibo at the score of 3-6 and at this period of the match he appeared to be the probable winner. In the second set the score was at 4 all when Bibo began to feel the effects of the strenuous play and faltered slightly, which opening Benson was quick to avail himself of and ran the set out at 6-4. The third set was entirely in Benson's favor, Bibo having apparently played himself entirely out. His returns became weak and ineffective, while his opponent never slackened his stride. As the consequence, the set was soon over, the score being 6-0, and Benson became champion for the second consecutive time. This marks the eleventh time the tournament has been

contested. Four men now with the Company have each won it twice. These four, Dodge, Monroe, Steele and Benson, have won their victories without the aid of a handicap. The cup seems to bear a charmed life, for the man who wins it a third time gets it for keeps, but so far no one has been able to accomplish this feat. With a man like



I. C. Steele, a former winner.

Bibo coming on, it appears probable that the cup will continue in play for some time to come.

R. A. MONROE.

The Financial Side of "Pacific Service"

Following is condensed approximate income account statement for the month of August, 1921, compared with the same month last year:

CONSOLIDATED INCOME STATEMENT (Including operations of Mt. Shasta Power Corporation)

MONTH OF AUGUST

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$3,091,750.95	\$3,213,593.17	.....	\$ 121,842.22
Maintenance.....	272,968.87	250,778.66	\$ 22,190.21	.....
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	1,701,165.50	1,980,292.43	.....	279,126.93
Total Expenses.....	\$1,974,134.37	\$2,231,071.09	.....	\$ 256,936.72
Net Income.....	1,117,616.58	982,522.08	135,094.50	.....
Net Interest Charges.....	383,006.81	393,531.76	.....	10,524.95
Balance.....	\$ 734,609.77	588,990.32	\$ 145,619.45	.....
Bond Discount and Expense.....	33,261.92	30,064.68	3,197.24	.....
Balance.....	\$ 701,347.85	\$ 558,925.64	\$ 142,422.21	.....
Reserve for Depreciation.....	283,333.33	233,329.45	50,003.88	.....
Balance to Surplus.....	\$ 418,014.52	\$ 325,596.19	\$ 92,418.33	.....
Dividends Accrued on Preferred Stock.....	186,699.28	152,606.15	34,093.13	.....
Balance.....	\$ 231,315.24	\$ 172,990.04	\$ 58,325.20	.....

Sales of electric energy for the month of August showed a decrease of 4.2% compared with last year, in spite of a net increase of 1,837 in the number of electric consumers during the month. The lessened demand for current is a natural result of the reduced activity of many manufacturing plants, coupled with a decreased agricultural load. These factors were offset to a great extent by increased domestic and commercial consumption; and the net addition of 11,051 electric consumers during the first eight months of the year furnishes ample assurance that the slight decrease in kilowatt-hour output is merely a temporary circumstance.

The reduction last April of 9% in electric surcharge, in conjunction with the smaller output of energy, was responsible for a decrease of \$121,842, or 3.8% in gross revenue during August. Operating expenses, however, decreased \$256,937, or 11.5%—a result, largely, of a one-third greater output of hydro-electric energy than in August 1920, with a consequent substantial decrease in consumption of fuel oil in steam generating stations. The first unit of the Company's Pit River developments with an installed capacity of 16,783 H. P., began delivering energy in August, and an additional unit of similar capacity, as well as the Spring Gap Plant on the Stanislaus River, with 10,054 H. P. installed capacity, will be placed in operation during September. The Company should now begin, therefore, to derive some return from the large capital outlays incurred in developing its hydro-electric resources and in extending its facilities, for which \$12,312,412 has been expended in the past eight months alone, and \$22,913,831 in the period covered by the above comparison.

The Company's gas business shows a consistent gain in volume of sales, the output of 7,696,474,200 cu. ft. in the first eight months of the current year representing an increase of 9.8% over last year's figures. Statement of income account for the eight months' period follows:

EIGHT MONTHS TO AUGUST 31ST

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$25,046,278.12	\$22,465,801.83	\$ 2,580,476.29	.....
Maintenance.....	2,248,938.55	1,702,091.72	546,846.83	.....
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	13,749,252.64	13,209,970.50	539,282.14	.....
Total Expenses.....	\$15,998,191.19	\$14,912,062.22	\$ 1,086,128.97	.....
Net Income.....	9,048,086.93	7,553,739.61	1,494,347.32	.....
Net Interest Charges.....	3,221,169.28	2,974,891.44	246,277.84	.....
Balance.....	\$ 5,826,917.65	\$ 4,578,848.17	\$ 1,248,069.48	.....
Bond Discount and Expense.....	259,123.07	186,278.92	72,844.15	.....
Balance.....	\$ 5,567,794.58	\$ 4,392,569.25	\$ 1,175,225.33	.....
Reserve for Depreciation.....	2,266,666.67	1,857,445.98	409,220.69	.....
Balance.....	\$ 3,301,127.91	\$ 2,535,123.27	\$ 766,004.64	.....
Dividends Accrued on Preferred Stock.....	1,432,102.65	1,201,823.11	230,279.54	.....
Balance.....	\$1,869,025.26	\$ 1,333,300.16	\$ 535,725.10	.....
Dividends Accrued on Common Stock.....	1,133,468.60	1,133,468.60	.....	.....
Balance.....	\$ 735,556.66	\$ 199,831.56	\$ 535,725.10	.....

Gross earnings for the first eight months of the year showed an increase of \$2,580,476, and net income available for bond interest increased \$1,494,347. Net interest charges of \$3,221,169 were earned 2.8 times, while dividends on preferred stock, after providing for depreciation, were earned 2.8 times. The balance after the payment of preferred stock dividends was \$1,869,025.

A net addition of 16,001 customers in all departments was effected during the first eight months of the current year, bringing the total number of consumers at August 31st, 1921 up to 585,360.

The salient features of the foregoing statements are:

- (1) A comparatively slight decline in gross revenues, due to rate adjustments and temporarily existing business depression.
- (2) A substantial reduction in operating costs.
- (3) The prospect of a more reasonable relationship than has existed for some years between the actual value of the Company's properties and the net return derived from operation. During the war and readjustment period, the question with public utilities was one of giving service at all costs rather than of making a fair return upon their invested capital. Present conditions appear to afford basis for the hope that a period is at hand when profits may be more commensurate with the money invested in the business.

The Super-Power Plan and "Public Partnership"

The so-called "super-power" project on the Atlantic seaboard is at the present time attracting nationwide interest. As most of our readers are aware, this project involves the connecting together of all the large modern power producing plants in the Atlantic States, the shutting down of small and

expensively operated plants, and the development of additional power resources. The plan calls for the complete electrification of railroads, or at least of all main line roads, the complete electrification of all coal mining operations, and the utilization of electric energy wherever steam or other power sources are now used. The program contemplates an estimated expenditure of one billion dollars, but the saving would pay between 14% and 20% on the investment in the opinion of Secretary of Commerce Hoover, who, with the aid of the U. S. Geological Survey, has been preparing a report to be submitted to President Harding about November 1st.

There are twenty Class One railroads in the Atlantic zone with a total trackage of 36,000 miles, about one-third of which can be economically electrified. Due to a lack of traffic density, branch lines will be left to steam operation. The one-third of electrified trackage would carry about 60 per cent of the traffic. The direct saving to the railroads would be \$40,000,000 annually in fuel alone and \$50,000,000 annually in engine repairs and maintenance. On the other hand electrification of their lines would cost the railroads \$40,000 a mile, including all expense of equipment and installation. With 12,500 miles to be electrified, this would amount to \$500,000,000. Yard and siding trackage would call for an additional expenditure of about \$300,000,000. Offsetting part of this expense, the engineers believe the roads would realize \$150,000,000 in salvaging their steam locomotives, leaving a net investment of \$650,000,000, on which the saving of \$90,000,000 a year would mean a return of about 14 per cent.

These figures are said to be conservative, with the probability that the savings estimated will be greater and the costs will be less, once the project is started.

There are 50,000 industrial plants that would be affected on the Atlantic seaboard. All would profit in cheaper power whether they buy it now from their local company or manufacture it themselves. But an additional advantage, which is making a great appeal in the East where power companies have nothing like the continuity-of-service record possessed by California companies, is that the breakdown of one power producing plant would not mean the discontinuance of service. All power producing units would be inter-connecting and the service would be as continuous as human ingenuity can make it.

The financial plan calls for a super-power company with non-par stock, which would be sold first to its own customers—i. e., to the present power producers and consumers. Stock not taken by customers will be thrown on the open market.

While the proposal to raise one billion dollars through the direct sale of stock to customers and to the existing power producers, may appear at first blush to be an almost impossible undertaking, when one considers what has been accomplished in this direction by the Pacific Gas and Electric Company alone, the task does not appear quite so imposing. This Company, in the period from June 3rd, 1914 to September 28, 1921 inclusive, has made 15,190 direct sales under the customer ownership plan, aggregating \$23,633,100 par value, and now has a stockholders' list numbering upwards of 17,000 investors, of whom over 13,500 are residents of California.

The "super-power" project on the Atlantic seaboard covers a field extending from Portland, Me., to Washington, D. C., and embraces every single one of the present 450 power plants, big and little, and every user of electric energy in that territory. There is to be no suggestion of Government ownership. In fact, all of the information coming from the men making the report indicates that they will urge that the project be turned over to private initiative, subject to Federal and State regulation. The suggestion to finance this gigantic enterprise through the direct sale of securities to consumers is a flattering endorsement of the customer ownership plan which was initiated by the Pacific Gas and Electric Company seven years ago and which has since been widely adopted among public utilities throughout the United States.

Pacific Service Magazine

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THE PACIFIC GAS AND ELECTRIC COMPANY

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*The Pacific Gas and Electric Company desires
to serve its patrons in the best possible manner.
Any consumer not satisfied with his service
will confer a favor upon the management by
taking the matter up with the district office.*

VOL. XIII SEPTEMBER, 1921 No. 4

EDITORIAL

Mr. Chester H. Rowell, member of the California State Railroad Commission, in a recent address to an audience in the southland complimented our Golden State very highly upon its progress in electrical development. To quote:

"From the limited beginnings of earlier time the electrical development of California has gone on until California leads the world. The Pacific coast has now realized that which the rest of the nation is merely trying to work towards. The United States government has a survey in progress to ascertain if they cannot, upon the eastern shore, link up the various power plants that exist at present and those of the future so that they can, in future, do on the Atlantic coast that which on the Pacific already has been done. On this, our coast, the development of hydro-electric power has progressed to this point after having passed the stages of fuel power of different kinds until today we have reached a point of development unequaled anywhere in the whole world.

"Co-operation has been one of the big factors in reaching this point, in development work the electric companies working together just as they co-operate and work together in delivering electrical power in order to effect the best possible service for the consumer."

In this connection it is interesting to note the results of a recent survey of the hydro-electric situation in California by the research department of the San Francisco Chamber of Commerce.

The conclusions reached in that study have been embodied in an article issued by the chamber as part of a series prepared for the purpose of giving the people a better knowledge of the resources and attractions of the territory in which their interests lie and of making them better community sellers.

The research made demonstrates the following pertinent facts relating to this subject:

California ranks second in the United States in the possession of potential water power, her resources in this respect being greater than those of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia and Florida combined. It is noticeable that the above list includes all the states bordering on the Atlantic ocean.

The Western states contain 68.6 per cent of the total potential water power development in the United States. Of these states California, Oregon and Washington have a potential development of 33.6 per cent. Only about 17.5 per cent of this potential power has actually been developed up to date.

With average California rates amounting to 1.66 cents, in comparison with 2.19 cents in other localities, San Francisco has a very decided advantage in any argument as regards power costs. Indeed, it has often been said that no more extensive system of distribution of electrical services can be found than around San Francisco.

In 1900, serving the state of California, there was in development but 30,000 horsepower from hydro-electric sources. There is installed over 1,000,000 horsepower today.

During 1920 California was third in the United States in the development of electric power, being only exceeded by New York with 6,841,512,000 kilowatt hours and Pennsylvania with 4,313,541,000, California's own record being 3,720,093,000 kilowatt hours. California produced 8.45 per cent of the entire electric power of the United States, with only 3.5 per cent of the total population.

In the address from which we have quoted Mr. Rowell called attention to the public service problem in general, and emphasized the absolute necessity for fair play as between the public utilities and the public they serve. We may be pardoned for again quoting:

"Public utilities are an essential part of our everyday life. The question is how best to maintain them. At first we undertook to treat them as private business and subsequent developments showed us the desirability of a reasonable degree of regulation. The primary need of public regulation is and must be to provide service at fair rates. One of the elements in making service possible is fair rates. These rates must be high enough to make the service possible and low enough to be fair to the people. If these rates are either too high or too low calamity will inevitably follow. Fortunately for the power companies they were able to profit by the experience of the railroads in their relationship with the public and with themselves. They learned a great deal by that experience.

"The idea of public ownership, if carried into effect, in many cases would mean public ownership precipitated before its time. In some cases the effect would be to establish rates too low to furnish service. It is highly essential that public ownership should not be precipitated prematurely. I do not see any reason, in theory, why the development of power, which is an essential of business, should not work out effectively under public ownership, but practice has demonstrated differently.

"It is very necessary to remember that the basis of regulation of public utilities is one half to see that the rate for the service is low enough and the other half that the service can be effectually rendered. It is a question of even justice, as between the consumer and the corporation. The proper maintenance of public control over public utilities can only be successfully carried out on this basis. It must be fair to the people and not unduly restrictive to the corporation, so as not to hamper it in conducting its business in the most effective manner. By working to these principles, you will best realize the service to which you are entitled and make it possible for the power companies to continue in our great industrial system of which they are such an essential part."

Mr. Rowell is but one of a large number of business men who have discussed the public service problem from this point of view, namely, equal justice for all concerned. We have quoted from others in past issues of PACIFIC SERVICE MAGAZINE and we expect to quote from others in the future. Meanwhile, commission rule for the public utilities is gaining in public favor daily, notwithstanding attacks here and there by misinformed and misguided persons usually, sometimes by persons having axes to grind.

Mr. Byron M. Clendenen, former member of the Public Utilities Commission of Ohio, declares his belief that it is now generally conceded that the extent of necessary information and data essential to a comprehensive regulation of service at fair, equal rates can be secured to the best advantage by the State through the public utility commission, employing trained experts to do the investigating. Under this method, points Mr. Clendenen, the State through its public utility commission takes the place of competition and furnishes the regulation which competition cannot give, thus avoiding the expense of duplication in investment and operation, now regarded as a needless economic waste.

Upon this question of rates Dr. David Friday, professor of political economy at the University of Michigan, has delivered some very decided opinions in his recent book, "Profits, Wages and Prices." He declares his opinion that utilities should be given rates sufficient to enable them to earn 9 or 10 per cent, if they are to attract capital to make the extensions and improvements which good service to the public demands. He points out that while wholesale prices were rising from 100 in 1913 to an average of 212 in 1919, the rates paid railroads and public utilities increased not more than 30 per cent at the outside. He refers to the increased value of utility service to the business world, and adds:

"There is no reason why those who utilize these services for the purpose of making such profits should not pay a rate for them which yields an adequate return on the investment employed. The prices they receive for their products have doubled; and they can justly be asked to pay double the utility rates, if that be necessary to give an adequate return upon public utility investment."

IN MEMORIAM - WILLIAM H. KLINE

Died September 7, 1921. Age 57 years.



In the death of William H. Kline, "Pacific Service" has lost a valued member of its family. Born near the town of Dixon, Solano County, in 1864, of parents who had crossed the plains in an ox team just after gold was discovered in California, his early school days were passed in and around Dixon. After graduating from high school, he entered Vanderbilt University, Nashville, Tenn., where he took the law course. After graduating he returned to California and settled in San Francisco. In the practice of his profession there he largely concentrated his efforts on municipal law and in this way came into touch with the different departments of the municipal government. This experience stood him in good stead when he came to be appointed Chief Deputy Assessor of the City and County of San Francisco.

He entered "Pacific Service" as Tax Agent in 1906, having full charge of the taxes and assessment reports covering the Company's properties. So successful was he with the Company's tax problems that in 1910 he was advanced to the position of General Agent and his authority extended over the franchises and rate-fixing questions of the Pacific Gas and Electric Company, including his old work of taxes and assessments.

"Billy" Kline, or, as we knew him more familiarly here in the Company, "William Hurry-up," served "Pacific Service" well and faithfully during the time he was connected with it. A busy man, he was never too occupied for a cheery greeting, a pleasant smile and a warm handclasp. A member of the Employees' Association, he was to be seen at its reunions whenever in town, and was always in attendance at the Assessors' Convention wherever it was held in California. He was greeted with the greatest of enthusiasm and cordiality by the different Assessors and enjoyed their confidence and admiration by his upright attitude in his work with them.

Mr. Kline was married and lived a very simple home life made pleasant and comfortable by a very estimable wife. To her our hearts go out in this, her hour of trial, and we offer to her the consolation that we believe the world is the better for his having lived and that those whom he has left behind are the richer for having known and loved him.

E. B. H.

Tidings From Territorial Divisions

East Bay Division

Progress in electric construction in the East Bay Division was recently outlined by R. A. Gentis, superintendent of electric distribution, in a talk before a meeting of the various departments of the Company. The following is a summary:

During the year the company has approved expenditures and has spent the better part of \$2,000,000 in improvements and additions in the electric department of this division. This includes only the major units, and not the great many smaller jobs occasioned by normal growth.

Early in the year turbo-generator and boiler installation at Station "C" was completed at a cost of more than \$1,000,000. Other work completed or under way includes the installation of two 6,000-kilowatt, 3-phase transformers, switches, cables, etc., at Station "A," approximating \$93,000 in outlay.

At Station "D," Temescal, work will be started in the very near future on the installation of an additional bank of transformers and switch cells, costing about \$75,000.

At Station "F," Berkeley, a bank of 3,000-kilowatt transformers and ten double 11,000-volt switch cells will be installed, costing approximately \$65,000.

At Station "H," 23rd Ave., work will immediately start on the construction of ten double 11,000-volt switch cells, and a new bank of transformers, amounting to approximately \$84,000. Line work consisting of five 11,000-volt lines between the 23rd Ave. station and the site of the new 50th Ave. station is under way. These lines will be capable of carrying 7,000 kilowatts each. A new line is being run between Station "A," at First and Grove, and Temescal stations, which will also carry 7,000 kilowatts. This is in addition to the three existing lines of approximately the same capacity. Also, work has been started on doubling all present 11,000-volt underground lines, increasing their capacity from 4,000 kilowatts to 7,000 kilowatts each. The cost of this line work is estimated at \$225,000.

Two new 4,000-volt lines will be run from the Berkeley station, and one from the Temescal station, with necessary apparatus installed in each station to relieve the overloaded condition of the 4,000-volt distribution system in Oakland and Berkeley. This work is estimated to cost \$60,000. \$43,000 has been appropriated for entirely rewinding No. 1 turbo-generator at Station "C." This work will probably be started in the very near future. No. 2 turbo-generator at Station "C" was entirely rewound during the year at a cost of \$18,000.

The work mentioned covers only that done by the division organization, and does not include the large amount of work under way as a means of delivering a portion of the power to be generated by the new hydro-developments, now under way into this division. Sites have been purchased for two large substations, each costing approximately \$500,000 when completed.

One of these sites is just south of the Tunnel road, near the water company's reservoir, known as Lake Temescal. Grading of the ground for the construction of this station is about to begin. The other site is at the end of 50th Avenue, approximately 300 feet south of the Southern Pacific railway. These stations will be the means of delivering power from the high-voltage transmission lines into the thickly populated districts of this division. A double-circuit steel tower line carrying two 110,000-volt lines is to be built from the South Tower station, near Crockett, to the station near the Tunnel Road, to be known as the Claremont station. These two 110,000-volt tower lines will then be continued from the Claremont station to a point between San Leandro and Mt. Eden, intersecting the present Newark-Oakland tower line which now connects Newark with Station H, at 60,000 volts, but will in the near future be made a double-circuit, 110,000-volt line and terminate at the new 50th Ave. Station. The Claremont and 50th Ave. stations will be model outdoor stations, with concrete buildings sufficient to house the switchboard and such other apparatus as it is absolutely necessary to keep indoors.

Each will consist of a bank of transformers of 30,000 kilowatt capacity, stepping down from 110,000 volts to 11,000 volts, and necessary oil switches, buses, etc., installed outdoors. The Claremont station will deliver its entire capacity to Station D, at 51st and Shattuck, through three 500,000 C. M., three conductor cables, run underground along the full length of Claremont Ave. The 50th Ave. station will deliver its power to Station H, at 23rd Ave., over the five 11,000-volt overhead lines mentioned above.

From the foregoing it will be readily seen that nearly all of the 60,000-volt lines now used for transmission purposes in this division will be abandoned, and only 110,000-volt lines used for that purpose.

The crossing over the Carquinez straits, from the North Tower to the South Tower will be rebuilt for 110,000 volts, as will also both of these stations. Ridge station, located on the hills just north of the University of California, which is now the terminus of the 60,000-volt lines from the north, will be abandoned as a substation. The present 60,000-volt lines from South Tower to Ridge substation then over the hills to Elmhurst, will be taken down. The Elmhurst station will be discontinued and substituted by a modern concrete station to be built approximately one mile south of San Leandro, near the Western Pacific Railroad, and will receive its power from the 110,000-volt lines running from Claremont to Mt. Eden, as above noted. The route of this line is from Claremont station over the hills to a point near Lake Chabot in San Leandro, then south to a point approximately two miles north of Mt. Eden, intersecting the Newark-Oakland line as mentioned above.

The Livermore Valley has always had a reputation for its fine quality of hay. A local hay and grain company has recently completed a shipment of hay to the J. H. Rosseter stables at Saratoga Springs, New York. Each year local firms dispatch orders to eastern racing centers for various trainers, resulting in many car loads going forward annually.

Hayward has come into further distinction as an egg-producing center. Hayward joined with Petaluma in making up a cargo shipment of eggs to Europe. The shipment was by water via Panama canal. The chickens are mostly raised by electric incubators. They were

hatched from eggs laid during the winter months and most of the eggs were laid before daylight. This early laying was stimulated by artificial light, the electric lamp.

The Virden Packing Company in Oakland rescued the peach crop of California. Fancy clings slumped to \$35 per ton. This price meant the farmer could not pay expenses. The peach growers and the Virden people pooled their interests and the crop started moving to Oakland. This stimulated the market and helped the growers out of a severe loss.

The Virden Packing Company, again came to the relief of the California farmer. Beef cattle had become unmarketable, regardless of retail prices not showing deflection in price. The Northern cattlemen could not find an Eastern market and local concerns were purchasing in the East, or had contracted so to do. These cattle growers looked in vain for local sale. Finally the Virden people were appealed to and promptly responded by agreeing to take two thousand head in periodical installments.

McKay and Austin have erected a new plant at Ford and Derby streets, Oakland, for the manufacture of automobile valves and stems. This is in addition to their present building at 23rd and Valley. This firm turns out the highest class case-hardened product. Gas is used exclusively.

The Ralph N. Brodie Company is installing an electric welding machine to weld steel bands used in the manufacture of starting gears, placed on automobile engine fly-wheels. Several of this type of electric welding have been placed in this vicinity in the last few months.

The Chevrolet Motor Car Company is nearing completion of its electric enameling ovens. Its initial demand will be 500 KW. and it expects to be in operation by October 15th.

The Excelsior Laundry is replacing steam engines with electric-driven. The initial installation was for 60 H. P., which will be increased in a short time to 100 H. P.

Garibaldi Tamale Parlor, 411—12th Street, one of the oldest tamale factories in Oakland is rebuilding its interior and

installing new furnishings in the dining room. In the kitchen two-section Lang superheated ranges are being installed with a modern steam table and auxiliary gas equipment.

The Davis Balbo-Breadery, Inc., 926 Washington Street, Oakland, have taken over additional factory capacity for their product. A large dutch oven has been placed in operation and in line with the progressiveness of this firm, a gas fired bakers' oven burner has been placed in use.

Mrs. J. A. Henderson's Bakery, 521 MacDonald Ave., Richmond, is enlarging its present equipment and capacity by the installation of a Middleby oven. A gas-fired bakers' oven burner has been installed.

E. D. V.

West Side and Shasta Divisions

Andrew E. Browne of the Redding office has gone back to the power houses, for he is strong for the outdoor life. At present he is at Kilarc, but will eventually be transferred to Hat Creek No. 2.

N. B. Gilmore, foreman at South power house, came to Redding one day early in August looking in the best of health, and on his way to the city. Two days later word was received that he was on his death bed, but today we learn that grim determination carried him through safely. We are very glad to say he is with us again.

The new Cottonwood substation is completed. Three breakers with reverse current relays are in operation for the respective lines, Hat Creek, Coleman and Anderson. A synchronizing apparatus for paralleling any two or all the lines is also included in the equipment. A residence is now being built for the substation operator.

Drum division, it is your loss and our gain. We more than welcome Hugh Flynn into our midst. We congratulate him on his promotion. We wish him success, as the superintendent of the new Hat Creek power plants.

The Anderson Prune Association reports that the crop of prunes this year is not so great but the quality is better.

Peaches have done exceptionally well, and pears made out better this year than the previous year. It is further stated that excellent prices were easily obtained for all kinds of fruit.

On August 22nd, at 4:58 P. M., Hat Creek Plant No. 1 began delivering its first power into the companys' system.

The company's new railroad from Bartle to Pit River Camp No. 1 will be completed by the latter part of September.

B. W. G.

San Joaquin Division

On August 14th Miss Verna Kauffman, one of the popular stenographers in Modesto office, was married to Mr. Melvin T. Menzies, an employee of the Standard Oil Company at Modesto. Miss Kauffman had been in the employ of the company about a year, and in that time had made many friends by all of whom she will be sorely missed. A few days before the wedding a small party was given for Miss Kauffman by Mrs. Moorehead at her home, at which the girls of Modesto office were entertained. The office force presented Miss Kauffman with a handsome electric percolator, and our best wishes and congratulations follow both young people. They are to make their home in Modesto.

Mr. Louis J. Nevraumont, who for the past eighteen months has been our efficient agent at Turlock, has been transferred to Modesto where he will be provided with a wider scope for activity. The position of agent at Turlock has been filled by Mr. O. O. Taylor, formerly of the Valuation Department in the city office. We welcome Mr. Nevraumont to Modesto and Mr. Taylor to the division.

Mr. and Mrs. H. B. Cannon welcomed into their family a daughter, Betty Jane. Mr. Cannon is our agent at Newman. Both he and Mrs. Cannon are being showered with many congratulations.

Mrs. Nellie B. Moorehead, counter clerk in Modesto office, recently underwent an operation. She is recovering nicely, and her familiar countenance will soon be seen again at the billing desk.

Mr. Webster Johnson, mainstay of the service department at Modesto, has returned from a two months' visit in Chicago and the Middle West. He is looking finely and we are all glad to see him back.

Application has been made for electric service at the Bonanza mine in the town of Sonora. This mine in the early days was really a Bonanza mine, a great deal of gold having been taken out of the mine during the period it was in operation. It has been inactive for a number of years, but recently investigations were made and results obtained that warranted the reopening of the property. We hope that the reopening will be highly successful for the owners of the mine. It means of course, more revenue for "Pacific Service."

The Shawmut mine on the Tuolumne river near Jacksonville is again beginning operations. This mine found it necessary to shut down several months ago because of the high cost of labor and material. They hope to be running at full blast within the next thirty days. They are supplied with both electricity and water by "Pacific Service."

Mr. D. H. Duncanson, superintendent of construction on the Don Pedro dam project, reports that excellent progress is being made on the job. It will be remembered that this dam is being constructed by the Modesto, Turlock Irrigation districts and will be a very fine piece of work, approximately the size of our Lake Spaulding dam. Mr. Duncanson will be remembered by the people of "Pacific Service" as one of the builders of the Spaulding dam.

The people of Patterson held their annual fair on August 24th, 25th, 26th and 27th. This fair was really a wonderful exhibit and the people of Patterson deserve a very great deal of credit for putting the fair on in excellent shape. The attendance was very satisfactory and all the visitors thoroughly enjoyed the exhibits and the amusements provided.

The Spring Gap power house will shortly be put in operation. All of the machinery has been installed at the plant, the pipe line has been completed, and the generators and transformers are now

being dried out. It is expected that the plant will be in operation before this article appears in print.

Authorization has been received covering extensive additions to the distribution system in the city of Modesto. Our city has grown so rapidly that it has been rather difficult to keep up with its progress. We now find it necessary to rebuild a portion of the town and enlarge the distribution system generally. Work has already been started.

S. J. D.

Colgate Division

Colgate power house has its first native. This is Raymond McIntyre, who was born on August 9th, his birthplace, the Mulligan House, near the power plant. Mr. and Mrs. Charles McIntyre, parents of the honored baby, have been residing at Colgate for some time.

McIntyre was strongly urged by fellow employees to name his off-spring "Colgate Power-House McIntyre," but he demurred. Young Raymond is by no means the only child at Colgate but he has the distinction of being a native of the settlement.

The Marysville municipal band closed a very successful series of summer open-air concerts late in September. The work of the band has received the merited praise of Marysville citizens, as it is composed entirely of amateur musicians. The band was organized early in 1921 and, under the direction of R. B. Fenton, has developed into a first-class organization.

It is planned to give several concerts during the winter months when vocal and instrumental solos will feature the programs.

Warring factions in several counties through which the Sutter Buttes-Tahoe-to-Ukiah highway lateral is to pass have decided to drop their quarrels and work toward the mutual goal of having the road built. The routing of the highway has given rise to disputes in practically every county, and the State Highway Commission has suspended all work until these matters have been definitely decided.

Mainly owing to the disastrous fire of July 2 last, Marysville is to have its insurance rates increased about 18 per cent, according to notification received from the State Board of Fire Underwriters. Several recommendations are embodied in the Underwriters' report, among which is a suggestion that a building code carrying provisions for all modern improvements be adopted by the city. The report also recommends that the personnel of the fire department be increased.

Practically all schools in Colgate Division opened for the autumn term during September. Oroville schools showed a marked increase in attendance. The Oroville Grammar school has 540 students this year. The Oroville Union High school has 215 enrolled.

Marysville High school commenced the new semester with an enrollment of nearly 300. Sutter Union High at Sutter City exceeded all expectations with an enrollment of approximately 175.

Yuba County led Northern California communities with its first annual county fair at Browns Valley this year. The fair was held in conjunction with the Farm Bureau picnic and was staged in a beautiful poplar grove on the banks of Dry Creek. The signal success of the fair has rendered it practically certain that the 1922 fair will be "bigger and better."

No less successful was the Colusa County Fair at Arbuckle, the "home of the almond." Agricultural displays, spectacular feats of horsemanship, athletic sports, vaudeville and dancing provided a week of delight for Colusans and residents of adjacent communities.

Miss Marion Weiland has been named librarian of the Grimes branch of the Colusa County Library to succeed Mrs. H. H. Storey, resigned.

The rice harvest has been delayed several days by the cool weather that prevailed in the Sacramento Valley during September. The early part of the month was warm, but the weather turned suddenly cool. The rice situation is recovering slowly but surely, and a fair price appeared in prospect for growers this season.

Expressing confidence that the duty on olives would not be changed in the

forthcoming tariff bill, Congressman Clarence F. Lea put new spirit into Oroville olive growers upon a recent visit to that city.

The olive tariff has given growers in the Oroville section some concern, as they contend that local olive raisers cannot compete with foreign markets if the domestic crop is not more adequately protected by tariff.

Miss Frances Switzer, of Berkeley, has been appointed Community Red Cross nurse for Marysville and Yuba City and has arrived to take up her duties.

TALE OF A DEER HUNT TOLD IN RHYME

(Following is from "Marysville Democrat", issue of September 13, 1921.)

John Mock chaperoned a hunting party recently, composed of the following: Arnie Zwanck, "Red", Syvertsen, Bill Norman, Merle Bremer, Tony Silva, Ed Tweeter, Eddie Johnson, Brod Rice, Mike Williver, Eddie Mock and John Mock. The party camped on the Rim Rock near Tamarack, and one of the party became so full of enthusiasm after imbibing the rarefied ozone of the high altitude that he broke out with an attack of poetry in which he describes the tail of a deer hunt. Here it is:

Mike and Merle and Tweeter and Mock went hunting along the big Rim Rock, along with Brod and Johnson and Tony; Brod on the mule and Mock on the pony.

Says Tweeter to Mock take the Tamarack and hold your stand till we get back; we'll work up Blind Canyon thru the manzanita, Merle with Mike and Brod with Tweeter.

Along about 10 we heard a shot and found it to be one Eddie Mock; says Eddie by Gad 'twas a mule tail buck; I tripped on a log and my trigger stuck.

About this time right straight ahead along came Norman, Zwauck and Red; says Zwauck by gosh I shot one double and over the ridge we found some trouble.

The buck ran down in the willow Bog and run amuck with some guy's dog and Zwauck went over—to his surprise the buck was claimed by the other guys.

Now about this time we're working ahead and Norman says, where in hell is Red; the poor devil climbed, his gat in hand, and landed over on John Mock's stand.

He whistled, hollered and oh, how he'd yell, and up jumped old Mock and said, what the ——! Stay here you goofy, whistling duck, I'm going down here and get a buck.

About this time Brod, Bill and Mike were yelling about their long, old hike; they headed for home at an easy pace while a big forked four kicked dirt in Mike's face.

Now right over there near Willow Lake Eddie Johnson and Merle were half awake, and off they go for the old Tamarack; they popped a two-pointer an awful whack.

Fine sport for Merle, Mock and Mike, but all the rest got was a tiresome hike; the real hunters were skunked to their surprise—the deer were shot by three Goofy Guys.

By Dorb.

Needless to say that Eddie Johnson is our own division manager, E. C. Johnson, while both Merle Bremer and Eddie Mock are "Pacific Service" men.

F. B.

Drum Division

The Nevada City auto park, located on the company's grounds on Coyote street, has become one of the most popular auto camps in the northern part of California.

Attractive features of this include a bathing pool and an up-to-date kitchen, which is equipped with gas plates and prepayment meters.

These grounds have accommodated from five to twelve cars daily since the opening of the season and many complimentary remarks have been made by those who have used the grounds.



Nevada City Auto Park, now a popular camping ground

Nevada City extends an invitation to all Pacific Gas and Electric employees who wish to make this a stopping place on their vacation.

L. H. H.

Sacramento Division

The wonderful Indian summer is upon us. The days are furnishing all the heat that is necessary to complete the harvesting of all our varied resources. The grapes, the raisins, the prunes, the rice and the innumerable other crops are all but ready. It means millions in real money, and the farmers need the money.

Incidentally, rice is coming into its own. Two carloads of the new crop sold Saturday for 3c per lb. "paddy"; this is a very good and profitable price and will encourage the cultivation of many thousands of otherwise barren land in this, Colgate, De Sabla and West Side Divisions.

This division, although not active in very large new construction work, is nevertheless, doing a great deal of reconstruction including re-location of pole lines which years ago were placed in any old position to accomplish immediate results. In the northeastern part of the city the pole line carrying current to one of our large dairies is being brought in at a new angle. This will require an installation of about twenty-five new poles. In addition to the dairy the new line will pass through a comparatively virgin territory which undoubtedly will require several installations of motors for irrigation purposes.

We also in the Oak Park and Curtis Oak districts are re-arranging lines on a joint-pole basis, with the result of beautifying the streets by leaving less poles. This work is covering quite a large area.

The Riverbank territory is doing a very good work through the agency of its Civic Club. About fifty houses have been wired and are now being electrically served. The club also has under way a system of street lighting. All these things serve to make the location more desirable as a residence center.

We regret sincerely that the town of Broderick has not as yet given us sufficient encouragement to venture to supply them with gas. Less than one-half of the residents are willing to subscribe or contract for gas service. We have offered all kinds of inducements, but to date they have failed to rise to the occasion.

Truly we are becoming a center of learning, if school houses are outward signs of inward conditions. There are at present eight wonderful buildings under construction in which are to be located the shrines of learning. Sacramento is rising to the occasion and doing her share to save America for herself by making safe the foundation of our edifice and that foundation is American school education—children firmly grounded on the fundamentals of the 3 R's and the history of our country and its ideals. We cannot get too much of this sort of thing.

We are still losing them. This time it is Eva Martin of the railway department. Lucky boy, Hahn; you drew one of our prizes. They were married and, as the story goes, will live happy ever afterwards. They certainly had a beautiful wedding and everything went off merrily. Speaking of marriages, the following is self-explanatory:

"Mr. and Mrs. Albert Diehm announce the marriage of their daughter Minnie Mae to Earnest H. Weston, on Friday, the 16th day of September, at Sacramento, Calif."

This is our division superintendent of gas distribution and the card was received from Del Monte.

The happy couple are extended all the customary felicitations.

It is catching! Observe! Married: Harvey Miller (1st operator at Station B) to Miss Helen Benjamin, 9-3-21.

The employees at Station "B" presented them with an elegant electric percolator.

The following article is from the Woodland Democrat of September 19th:

"Main Street blaze of lights—System praised.

"Woodland's electrolier system flashed on for the first time at 6:50 o'clock Saturday night, illuminating Main Street from boundary to boundary, meeting all expectations except for a few who would find a flaw in some priceless gem. The lights are more illuminating than the cluster lights of Sacramento and, generally speaking, are satisfactory throughout. Aside from adding to the commercial section they give the city a metropolitan appearance. The business men are satisfied and the citizens generally pleased with the newest feature of civic improvement."

THE CAPTAIN.

San Francisco Division

On August 31st the Reo Motor Car Company of California held a noonday



"Pacific Service" truck in the Reo Company's parade.

parade of Reo speed wagons, with over 100 cars in actual service in San Francisco participating. Among this number were several of the fleet of cars of the Pacific Gas and Electric Co.

That evening a banquet was given to the drivers of these trucks where a motion picture, "Demon Dick and Careful Harry," was shown. At the banquet Mr. P. L. Emerson, President of the Reo Motor Car Company of California, offered a cash prize to the driver of Reo speed wagon who showed the best efficiency over a certain period of time. This plan

is putting it up to the driver to make his record what it should be and enriching the successful competitor to the extent of \$100.00.

Contests like this should tend to bring up the efficiency of all car drivers.

J. W. VARNEY,
Supt. of Garage.

Our accounting department is to lose Miss Helen McDonald, who, after five years of faithful performance of her duties, leaves to take up the management of a certain young man's home office.

Here's hoping you make a success of it, Helen. Good-by and Good Luck.

The following has been received from Mrs. Robert Patek, widow of the eminent surgeon, whose passing was made the subject of an "in memoriam" notice in our August issue:

"2355 Broadway, San Francisco.
Mr. Charles H. Suydam,
The Pacific Service Employees' Association,
445 Sutter Street,
San Francisco, California.
My dear Mr. Suydam:

Will you express to the men of your Association my deep appreciation of their very kind offering of sympathy?

Dr. Patek had always told me how great a privilege he deemed it to be able to serve your men and to try to gain their full confidence. I know he served them with all his heart and to the best of his ability.

I shall always consider it a privilege to avail myself of the offer of service from your organization.

Thanking you for your kind thought,
Sincerely yours,

SADIE D. PATEK."
H. B.

Artificial Gas Discovery

(From the "Sacramento Union," issue of September 26th, 1921.)

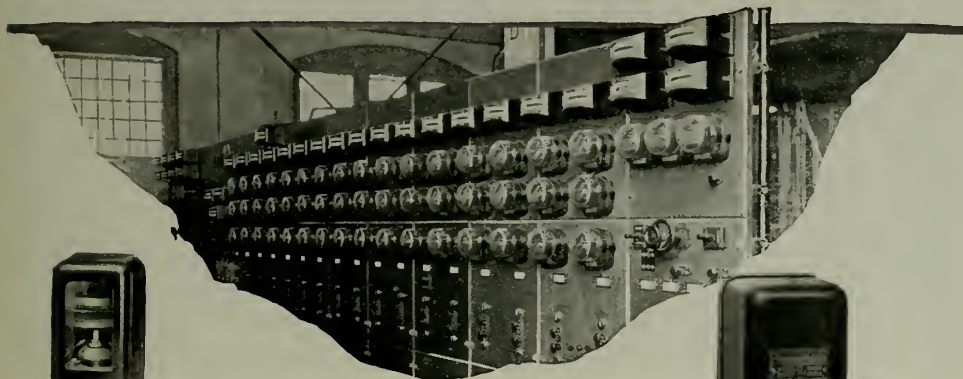
We are prone to think of many things in daily use today as being recent discoveries, when often, as a matter of fact, they were given to the world hundreds of years ago. Artificial gas has generally been considered a modern discovery, as it was little more than a century ago when Sir Walter Scott scoffed at "a madman in London trying to make a light without a wick." Yet recent investigations by the historical committee of the American Gas Association prove that Von Helmont, a Belgian chemist, early in the seventeenth century discovered gas in experiments with fuels. He reported that coal used in his retorts "did belch forth a wild spirit or breath," to which he gave the name of "geist," the German for ghost. For two centuries

"geist" was held in superstitious awe by the world, and attempts to use it commercially were frowned upon. Napoleon classed a proposal to light London with it as "one grand folly."

In 1806 America saw its first artificial gas in a museum in Baltimore, and ten years later that city organized the first commercial gas company in this country. Other cities were quick to follow. But for the veil of mystery thrown around "geist," it would have been utilized commercially shortly after Von Helmont's discovery of it. In the past, superstition has proven the greatest foe to progress and invention, death often being meted out to those inventing new things. Today we acclaim and honor inventors.



Keeping pace with the rapid expansion of relay application requires research and manufacturing facilities of a high order



Inverse Time-limit
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There is a G-E Relay for every purpose

Extensive research and development work by G-E engineers have resulted in the production of a complete line of relays covering every known requirement.

A few of the important types are:—

Induction type for protection against reverse power.

Balance Differential type to protect parallel transmission lines against damage due to unbalancing caused by fault in either line.

Temperature type for protection against excessive heating of bearings or windings.

Auxiliary type to extend the scope of operation of other relays.

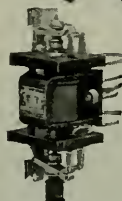
Trip free type to prevent electrically operated air or Oil Circuit Breakers from being held closed under improper conditions.

Every type of G-E Relay is reliable for its recommended application.

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Temperature Relay



Trip-free Relay



Time-limit Induction
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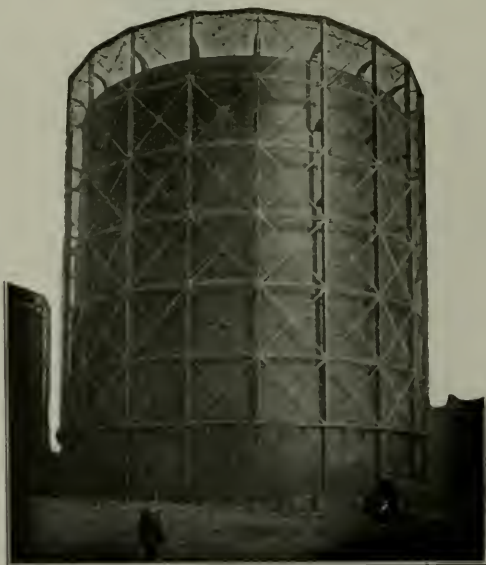
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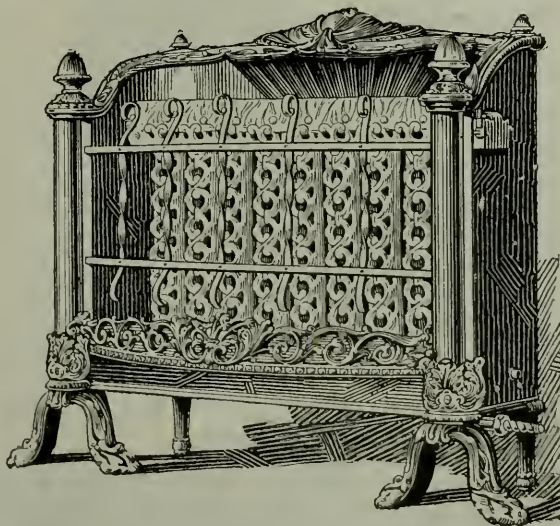
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WELSBACH Gas Heater Is Self-Lighting

No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

THE WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California



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Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required. The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

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A Combination Gas Range

THAT PERMITS OF EVERY
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QUALITY SERVICE FUEL ECONOMY

Gas
Ranges
and
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Impulse and Reaction Turbines

Range in size from $\frac{1}{4}$ HP upwards and for any head down to 20ft. The illustration herewith is of the Blue Earth Development, Consumers Power Co. Minnesota, containing two Pelton Duplex Reaction Turbines operating under a head of 57 feet.

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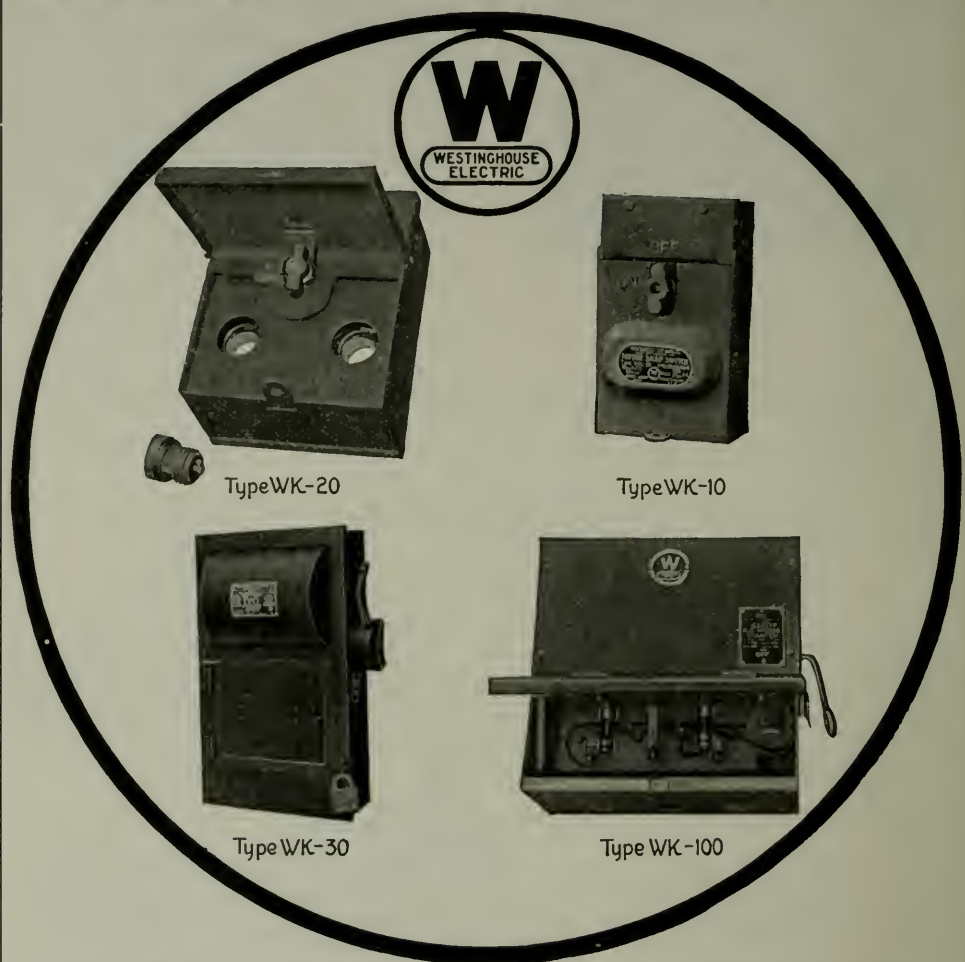
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The small alternating current motor starters of the Westinghouse WK line are revolutionary in character. They definitely supersede all other starters for the same service now on the market.

All of the features needed in an ideal starter were carefully determined, and these were then skillfully incorporated in such simple mechanisms that these starters are smaller, lighter, and of lower cost than the majority of starters now regarded as standard.

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They protect the motor from overloads both when starting and when running.

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Westinghouse quality in construction guarantees thorough reliability and long life.

Easy to install. Renewals of all wearing parts can be made without disturbing conduits, connections, or box setting.

Type WK-100 Up to 3 hp. 110 volts, 10 hp. 250 volts, 15 hp. 550 volts.

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Type WK-10 Up to 2 hp. all voltages up to 550

Catalogue 12-A gives full information and prices on Westinghouse "100 per cent safe" starters, switches, panels, and switchboards. Send for a copy.

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TO OVER 582,300 CONSUMERS OF

GAS • ELECTRICITY • WATER • STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

DIRECTLY			INDIRECTLY			TOTAL	
	No.	POPULATION	No.	POPULATION		No.	POPULATION
Electricity.....	171	1,120,503	60	153,449		231	1,273,952
Gas.....	56	1,127,000	2	8,600		58	1,135,609
Water (Domestic).....	18	61,710	8	15,488		26	77,207
Railway.....	1	65,908				1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
¹ Alameda.....	28,806	¹ El Verano.....	400	¹ Meridian.....	200	¹ San Leandro....	5,703
¹ Albany.....	2,462	¹ Emeryville.....	2,390	¹ Millbrae.....	300	¹ San Lorenzo....	500
¹ Alvarado.....	1,000	¹ Escalon.....	600	¹ Mills.....	400	¹ San Martin.....	250
¹ Alviso.....	517	¹ Esparto.....	200	¹ Mill Valley.....	2,554	¹ San Mateo.....	5,979
¹ Amador City.....	377	¹ Fairfax.....	250	¹ Milpitas.....	300	¹ San Pablo.....	500
¹ Anderson.....	750	¹ Fairfield.....	1,008	¹ Mission San		¹ San Quentin....	3,000
¹ Angel Island....	500	¹ Fair Oaks.....	300	¹ Jose.....	500	¹ San Rafael.....	5,512
¹ Antioch.....	1,936	¹ Fall River Mills	300	¹ Modesto.....	9,241	¹ Santa Clara.....	5,220
¹ Aptos.....	370	¹ Farmington....	300	¹ Mokelumne Hill	900	¹ Santa Cruz.....	10,917
¹ Arbuckle.....	900	¹ Folsom.....	300	¹ Monterey.....	5,479	¹ Santa Rosa.....	8,758
¹ Atherton.....	500	¹ Folsom.....	2,000	¹ Morgan Hill....	646	¹ Saratoga.....	500
¹ Auburn.....	2,289	¹ Forestville....	250	¹ Mountain View	1,888	¹ Sausalito.....	2,790
¹ Barber.....	500	¹ Fresno.....	45,086	¹ Mt. Eden.....	200	¹ Sebastopol.....	1,493
¹ Belmont.....	375	¹ Gilroy.....	2,862	¹ Napa.....	6,757	¹ Shasta.....	200
¹ Belvedere.....	616	¹ Glen Ellen....	1,000	¹ Nevada City....	1,782	¹ Shellville.....	200
¹ Benicia.....	2,693	¹ Gonzales.....	500	¹ Newark.....	500	¹ Sheridan.....	250
¹ Ben Lomond....	400	¹ Grass Valley..	4,006	¹ Newcastle.....	750	¹ Smartsville....	300
¹ Berkeley.....	56,036	¹ Gridley.....	1,636	¹ Newman.....	1,251	¹ Soledad.....	400
¹ Biggs.....	683	¹ Grimes.....	500	¹ Niles.....	1,000	¹ Soquel.....	400
¹ Bolinas.....	200	¹ Groveland.....	500	¹ Novato.....	400	¹ Sonoma.....	1,684
¹ Brentwood.....	200	¹ Guerneville..	800	¹ Oakland.....	216,261	¹ Sonoma.....	1,684
¹ Broderick.....	700	¹ Hamilton City.	250	¹ Oakley.....	200	¹ South San	
¹ Burlingame....	4,107	¹ Hammonton....	500	¹ Occidental.....	600	¹ Francisco.....	4,311
¹ Byron.....	350	¹ Hayward.....	3,487	¹ Orland.....	1,582	¹ Standard.....	500
¹ Campbell.....	600	¹ Hercules.....	373	¹ Orville.....	3,340	¹ Stanford Uni-	
¹ Capitola.....	300	¹ Hillsborough..	931	¹ Pacheco.....	300	¹ versity.....	2,700
¹ Carmel.....	638	¹ Hollister.....	2,711	¹ Pacific Grove..	2,974	¹ Stockton.....	40,296
¹ Cement.....	1,000	¹ Honcut.....	500	¹ Palo Alto.....	5,900	¹ Suisun.....	769
¹ Centerville....	1,000	¹ Hughson.....	250	¹ Paradise.....	500	¹ Sunol.....	350
¹ Ceres.....	637	¹ Ione.....	1,000	¹ Patterson.....	694	¹ Sunnyvale.....	1,675
¹ Chico.....	9,339	¹ Irvington.....	1,000	¹ Penn Grove....	200	¹ Sutter City....	250
¹ Colfax.....	573	¹ Jackson.....	1,601	¹ Perkins.....	250	¹ Sutter Creek...	920
¹ College City...	250	¹ Jamestown....	750	¹ Petaluma.....	300	¹ Tehama City...	196
¹ Collinsville...	200	¹ Kennett.....	464	¹ Piedmont.....	4,282	¹ Tiburon.....	400
¹ Colma.....	1,500	¹ Kentfield.....	500	¹ Pike City.....	200	¹ Tracy.....	2,450
¹ Columbia.....	200	¹ Keswick.....	200	¹ Pine.....	967	¹ Tres Pinos.....	300
¹ Colusa.....	1,846	¹ King City.....	1,048	¹ Pittsburg.....	4,715	¹ Tuolumne.....	1,500
¹ Concord.....	912	¹ Knights Land-	400	¹ Pleasanton....	991	¹ Turlock.....	3,394
¹ Cordelia.....	300	¹ ing.....	400	¹ Port Costa....	900	¹ Vacaville.....	1,254
¹ Corning.....	1,419	¹ La Grange.....	200	¹ Princeton.....	300	¹ Vallejo.....	21,107
¹ Corte Madera..	607	¹ Larkspur.....	612	¹ Red Bluff.....	3,104	¹ Vineburg.....	300
¹ Cotati.....	200	¹ Lathrop.....	600	¹ Redding.....	2,962	¹ Walnut Creek..	538
¹ Cottonwood....	500	¹ Lewiston.....	200	¹ Redwood City..	4,020	¹ Warm Springs..	200
¹ Coyote.....	200	¹ Lincoln.....	1,325	¹ Rio Vista.....	1,104	¹ Waterford.....	250
¹ Crockett.....	1,500	¹ Live Stock....	300	¹ Ripon.....	500	¹ Watsonville....	5,013
¹ Crow's Landing	300	¹ Livermore....	1,916	¹ Riverbank.....	200	¹ Wheatland.....	435
¹ Daly City.....	3,779	¹ Lomita Park..	600	¹ Rocklin.....	643	¹ Williams.....	650
¹ Danville.....	400	¹ Los Altos.....	500	¹ Rodeo.....	300	¹ Willows.....	2,190
¹ Davenport.....	300	¹ Los Gatos....	2,317	¹ Roseville.....	4,477	¹ Winters.....	903
¹ Davis.....	939	¹ Los Molinos..	200	¹ Ross.....	727	¹ Woodland.....	4,147
¹ Decoto.....	300	¹ Madison.....	300	¹ Sacramento....	65,908	¹ Woodside.....	300
¹ Del Monte.....	300	¹ Manteca.....	1,286	¹ Salinas.....	4,308	¹ Yolo.....	350
¹ Denair.....	200	¹ Mare Island...	600	¹ San Andreas...	1,183	¹ Yuba City.....	1,708
¹ Dixon.....	926	¹ Martinez.....	3,858	¹ San Anselmo...	2,475		
¹ Drytown.....	200	¹ Marysville....	5,461	¹ San Bruno.....	1,562		
¹ Duncan's Mills.	200	¹ Maxwell.....	500	¹ San Francisco..	506,676		
¹ Durham.....	250	¹ Mayfield.....	1,127	¹ San Jose.....	39,642		
¹ Dutch Flat....	750	¹ Menlo Park....	900	¹ San Juan.....	350		
¹ Eldridge.....	500						
¹ El Cerrito.....	1,505						
¹ Elmira.....	350						

Unmarked—Electricity only.

¹Gas only.²Gas and Electricity.¹Gas, Electricity and Water.²Gas, Elect. and St. Railways.³Electricity and Water.⁴Electricity supplied through other companies.⁵Gas supplied through other companies.⁶Water supplied through other companies.**"PACIFIC SERVICE" FACTS:**

On August 22, 1921, the first plant of the big Pit River project was put into operation. This water power plant so-called Hat Creek No. 1, has an installed capacity of over 16,700 H. P. It would require approximately 250,000 barrels of oil to generate by steam the equivalent amount of energy in one year that this plant is capable of producing.

Operates 25 Hydro-Electric Power Plants.

Operates 4 Steam-Electric Power Plants.

Operates 20 Gas Plants.

Total Cities
and Towns... 1,347,844
Add Suburban
Population... 368,115
Total Popula-
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SAN FRANCISCO

PACIFIC SERVICE MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



"PACIFIC SERVICE" IN THE SIERRA NEVADA — SPILLWAY DAM ON LAKE SPAULDING

Vol.
12

OCTOBER 1921

No
5

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Pacific Service Magazine

Volume XIII



Number 5

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Members of the Employees Welfare Committee upon whose recommendation the new pension plan of our company was adopted. Portrait in the center is of Mr. F. A. Lench, Jr., vice-president in charge of public relations and service, chairman of the committee; immediately above him is seen Mr. W. E. Greed, president of the company, with vice-president and general manager John A. Britton to the left and second vice-president and treasurer A. F. Hockenbeamer to the right. To the left of Mr. Lench appears Mr. J. P. Coghlan, manager of the claims department, and to the right Mr. R. E. Fisher, past chairman of the Pacific Service Employees Association. Below these, left to right, are found Messrs. E. G. McGann, manager of the personnel department, A. U. Brandt, chairman of the P. S. E. A., Jos. Worthington, delegate at large to the Employees Welfare Committee from the P. S. E. A., and R. W. Robinson, secretary of the committee.

Increased Rewards for Faithful Service

By WIGGINTON E. CREED, President Pacific Gas and Electric Co.

President Creed in his article sets forth the advantages to the employees of the pension system of the company and pays a tribute to the loyalty of the men and women of Pacific Service.—EDITOR PACIFIC SERVICE MAGAZINE.

The Board of Directors has revised and amended the company's pension system. The changes are important and increase the pension allowance for the great majority of employees.

This action has not been taken lightly, or without due consideration of what it means both to the company and to its employees. Above all else, it emphasizes the dependence of human progress upon loyalty and devotion to duty and recognizes anew the honor achieved by long and faithful service in the world's work.

To the Employees' Welfare Committee was assigned the task of making the studies and investigations and performing the detailed work involved in so vital a matter as the reconstruction of the pension system of a large public utility. The committee's proposals for revision and amendment represented the judgment of all its members, and received the approval of the Directors, who adopted them, effective October 1, 1921.

The outstanding amendment is one providing that pensions once granted shall not be withdrawn or modified. The original system of February 1, 1916, did not undertake to make pensions permanent, but reserved the right to discontinue any and all pensions at any time. The new system, in effect, guarantees

that once an employee has been granted a pension, it shall continue for the remainder of his life. The Employees' Welfare Committee recognized the fact that no Board of Directors could assume the responsibility of agreeing that a pension system would never be modified or withdrawn, but the interest of an employee, who has earned but not been granted a pension at the time of any withdrawal or modification, has been amply protected by a provision that withdrawal or modification shall not affect his claim to a pension.

The company has regarded pensions earned or granted as permanent, so these new provisions make no change in the company's policy, but they do bring the pension system into harmony with it. The amendment covering these points reads as follows:

"The company reserves the right at any time at its discretion to withdraw or modify this system; but *withdrawal or modification thereof shall not in any case apply to or affect any employee's right to a pension already granted* or any employee's claim for a pension based on causes existing prior to the time when such withdrawal or modification shall become effective."

Next in importance to the definite and accurate expression of the company's

policy seem to be the amendments affecting the allowances. The minimum pension has been increased from \$15.00 to \$25.00 per month; the maximum pension has been limited to \$500.00 per month, and the pension rate on wages and salaries up to and including \$200.00 per month has been raised from one and one-half per cent to two per cent per year. This increases by one-third all pensions on wages and salaries up to \$200.00 a month. Above \$200.00 a month the rate is left as before, one and one-half per cent, subject to the limitation as to the maximum pension. The increased rate has been extended to those already on the pension roll.

Two examples will serve to illustrate the application and result of the new rate.

(1) If an employee has been in the service for 30 years and his or her average salary or wages for the last ten years has been \$100 a month, his or her pension allowance will be two per cent a year for 30 years, or 60 per cent of \$100; that is \$60 a month.

(2) If an employee has been in the service for 30 years and his or her average salary or wages for the last 10 years has been \$250 per month, his or her pension allowance will be two per cent a year for 30 years on \$200, or 60 per cent of \$200, or \$120, and one and one-half per cent a year for 30 years on \$50, or 45 per cent of \$50, or \$22.50; that is a total of \$142.50 per month.

Formerly the pension in the first case would have been \$45 per month, and in the second case \$112.50 per month.

Other amendments may be briefly summarized as follows: All applications and recommendations for pensions must be referred to the Employees' Welfare

Committee for investigation and report; discharge from the company service is not a bar to a pension if the pension has been fully earned at the time of discharge; the retiring age for women is reduced from sixty-five to fifty-five years; employees injured in the service may be pensioned if other adequate compensation has not been provided for them; the Personnel Department is required hereafter to report from time to time all employees who have reached the pension age. The purpose of this report is not to force retirement, but to decrease the possibility of overlooking employees entitled to retire and be pensioned. When employees eligible to retirement can do their work, or do other, or lighter work, they will not be retired unless they themselves wish it.

The new pension system will be presently issued in printed form for distribution to employees. I earnestly urge that all of them read it in full. They will find it a definite expression of the tradition and policy of the company to reward and honor the men and women whose loyalty and devotion holds high the torch of "Pacific Service."

A final word to those whose long and faithful service has earned them a pension and to those who are approaching that distinction. The names on the pension roll hold unimpeachable certificates of character. They are there as a permanent record of duties faithfully performed, of obligations honorably discharged, of lives well spent. Retirement on a pension is thus much more than a reward. It signifies achievement in life's work, because of the possession of those qualities of mind and heart mankind admires and defines as character. The pension roll is a roll of honor.

Our Sacramento-Woodland High-Pressure Gas Transmission Line

By R. S. FULLER, Field Engineer, Gas Department

April, 1921, marked the completion of a high-pressure gas termination line from the Gas Works at Sacramento to the City of Woodland.

From the best information we can find, this line was first thought of and surveyed in 1902 by R. T. Valentine and W. M. Henderson, who drove from Sacramento to Woodland by the way of Elkhorn. At that time and, also, in 1908, when the line was again surveyed, this time not by way of Elkhorn but via Davis, a two-inch main was estimated to be sufficient for the purpose. It was not until the spring of 1920 that work actually started.

This line, which is 24.53 miles in length, passes through the town of Davis and supplies gas for the distribution system there which has just been completed, giving gas to this town which has never before enjoyed its conveniences. The line will also make possible the removal of the Woodland Gas Works, which is situated very near the business district. This plant was erected in 1874 by John Q. Brown, and manufactured gas from coal brought to this coast by ships as ballast. The company was later merged with a lighting company and the whole operated under the name of the Consolidated Electric Light, Gas and Power Company. In 1896 the plant was rebuilt and the Van Syckell type of oil gas machine was installed. A Lowe type generator was built in 1901, and in 1904 there was built for this plant a Jones type generator.

The transmission line leaving the gas works at Sacramento is of six-inch extra heavy pipe and continues of this character across the Sacramento River, which is encountered immediately outside the works yard. Crossing the river entailed some very unusual construction, necessitating the use of a clam-shell dredge, a pile driver and the employment of a diver to inspect and aid in placing the pipe in the trench cut by the dredge, which was of an average depth of twelve feet below the river bed.

Before the pipe was ready to be placed in the trench it was made up into lengths of 200 feet on a temporary trestle on the west bank of the river. After each length was made up it was carried on pontoons away from the bank toward the middle of the stream above the trench and another 200-foot length was made up and welded to the first one. This procedure was carried out, keeping the channel, which at this point is close to the east bank of the river, open for navigation until the pipe on pontoons and on the trestle was of sufficient length to reach across the water, when final preparations for placing the pipe in the trench were made.

As soon as the dredging of the ditch was completed, six piles were driven along the line to be occupied by the pipe for use in lowering it into position. These piles were temporary only and projected above the surface of the water at least five feet. A Sunday morning was chosen for lowering the pipe into place, as there would be no freight boats moving on the river and no other regular transportation company vessels after 6:30 A. M.

The section of pipe which had been connected and was lying on the pontoons was now welded to the section on the temporary trestle and the whole towed into a position directly over the trench. The pile driver was now called into service, this time as a derrick, and the pipe hoisted free of the pontoons



Leaving Sacramento gas works. The clam-shell dredge in operation.



Pipe line on pontoons ready to be lowered into the trench.

and fastened to the piles by means of blocks and tackles which were to be used in letting the pipe down to its final resting place. As no piles had been driven in the channel near the east bank, the dredge was moored alongside the line and the pipe lowered from her deck. When all was in readiness the word was given to slack away on the lines and the pipe gradually settled into place. As soon as all lines were entirely loose, showing that the pipe had reached bottom, the diver was sent down to make an inspection. He found that in a few places sand had drifted into the trench in small piles which held the pipe up from the bed of the cut. The water pump on the dredge was started and by means of a strong force of water through a hose the diver cut the sand from under

the pipe and it was finally placed at half past four in the afternoon. There was no further need for the piles, so they were pulled up; the sand which had been removed from the cut was replaced by the dredge and the job of crossing the river was done.

Before the filling in of the cut was done, however, an air test at 110 pounds pressure was put on the line. This pressure did not drop for a period of 24 hours, so the pipe was known to be free from leaks.

As mentioned before, the pipe used in crossing the river is six-inch extra strong, the walls being nearly one-half inch in thickness. In order to insure the strength which would be needed to withstand the strains sure to be set up in the handling it would receive when being lowered and in conforming itself to the cut in the bed of the river, a method of joining the pipes to suit the conditions was designed. The ends of the pipes were first butted together as in the ordinary welded joint and the weld built up to double strength. A piece of seven-inch extra strong pipe fourteen inches long was then slipped over the weld so that it projected seven inches on each side of the joint, and then this short pipe or sleeve was welded at each end to the six-inch pipe; this gave three welds at each joint instead of one, with strength in proportion. Over this joint a cast-iron sleeve was placed which was filled with lead and caulked to give added stiffness and strength and weight. For protection against corrosion the pipe was painted with a heavy bituminous paint and covered twice with a burlap and felt covering, being wrapped with wire and painted after each thickness of the covering.



Sending down a diver to locate the pipe in place on the river bottom.



Applying the covering to the pipe before laying.

At a short distance west of the river the pipe size was changed to 5¼ inches and continued of that size through the town of Davis. After leaving the west bank of the river, the construction for a few miles was of ordinary character, the ditch being excavated by hand labor. Here the pipe was painted with bituminous paint covered with burlap and felt, wrapped with wire and again painted.

When the east end of the causeway which carries the traffic across Yolo Basin was reached a deep slough was encountered which contained water to a considerable depth and made submarine excavation necessary. This was accomplished by means of a drag-line bucket and a donkey engine. From here for a distance of nearly three miles across the basin the pipe was laid about ten feet north of the causeway in a hand excavated trench. Near the west end of the causeway the line ran through a rice field which was flooded with water, as our work was being done during the growing season. The presence of this water made hand excavating next to impossible, so a contractor was called in who dug the ditch with a machine closely resembling a small steam shovel.

The portion from the end of the causeway approach for about one-half mile toward Davis was dug by our own

gang. From this point on to the city limits of Davis and from the west side of Davis to the city limits of Woodland the ditch was excavated by the trenching machine owned by this company. That portion of the trench through the town of Davis and the City of Woodland was excavated by hand.

Another change in the size of the pipe was made just outside of Davis. This time it was reduced to 4¼ inches.

On the lot near the electric substation at Davis a meter and regulator house was erected in which were housed the master meter which now measures all the gas sent into the Davis distribution system and the regulator which reduces the pressure from that carried on the transmission line to about five pounds. The gas is taken from the transmission line at no other point in Davis. This line is operated under an initial pressure of 25 pounds at the Sacramento plant and has a terminal pressure of 15 pounds at Woodland. The gas is delivered to the low pressure distribution system through regulators located in a pit near the Woodland Gas Works.

The completion of this transmission line marks another step toward the utilization of gas manufacture in a few large plants which we may see carried a great deal farther in the near future.



Section of road trench excavated, with pipe laid ready for welding.

P. C. G. A. Convention Sets a Record Mark for the Industry Out West

By FREDERICK S. MYRTLE, Manager Publicity Department.

The gas men of the Pacific Coast assembled at Del Monte this year for their 28th annual convention and enjoyed, as is usual with gatherings amid such delightful surroundings, the double advantage of a successful outing from the viewpoints of attendance and serious interest, combined with social entertainment of an unusually attractive character.

The convention was especially distinguished for two prominent features. First, the attendance of 165 established a record to date and did, perhaps, more than anything else to establish the truth of what has been consistently maintained by those having the welfare of the gas industry at heart, namely, that the industry itself is not only flourishing but decidedly on the upgrade. Second, the experiment was tried of dividing the serious activities of the convention into sections, accounting, commercial and technical, a special committee being appointed to take care of each and having a definite period allotted for its deliberations. For instance, the accounting committee, under the chairmanship of A. R. Parratt, was given the afternoon of the first day. The second day was given over to the technical committee, the chairman of which was E. L. Hall. The commercial committee, headed by Frank Weiss, was divided between the morning and the first part of the afternoon session of the last day. It can be said here that the experiment proved entirely successful and that it will be repeated next year, with slight modifications in the direction of shortening labors.

These sessions are dealt with elsewhere. In the way of general features, the report of the Public Policy Committee, presented this year by Chairman William Baurhyte, is deserving of more than passing notice. The report was divided into subheads, namely, service, public relations, customer ownership of securities, return on investment and public ownership. As the chairman ex-

plained, while none of the topics discussed were new, yet the endeavor was made to apply to each the psychology of post-war economic and social conditions.

The report noted a marked improvement in the relations between utility and consumer, due, in part, to the confidence which the public has manifested in state regulation and control; in part to the fairness and openness displayed by the utilities themselves in dealing with the public. "In this connection," said the report, "it is believed that the war and post-war conditions have been of incalculable benefit in developing and strengthening the confidence of the public in the fair dealing of the utilities. The fact that the increase in cost of service was negligible in comparison with the increase in cost of food and clothing and other necessities of life demonstrated to the public not only the integrity of these industries, but, more important still, that here at least there was no profiteering."

Here the report voiced a note of warning. While the foregoing was true, it was also a fact that the cost to the consumer of utility service had not increased in anything like proportion to the cost of other commodities. It was necessary to bring this fact home to the public in order to show that the cost of utility service could not be reduced in the same way as other commodity prices. First, because rates had not been raised in keeping with other commodities; second, because utilities in general, those in California in particular, were suffering from a heavily accumulating burden of taxation; third, because they were required to expand enormously at a time when material and labor costs were at peak prices and to borrow millions of dollars of new capital for this purpose at abnormally high interest rates.

Under the head of customer ownership the report called attention to the generally accepted estimate of an investment of \$5.00 in plants and equipment for each \$1.00 of actual gross revenue

from public utility service. No private business is conducted on such a slow turnover and yet no other business requires so much capital. It was thought necessary to call public attention to the desirability of interesting consumers in public utility service through the sale of stock, and in this way to bring them to a fuller realization of the fact that utility managers are not the owners but merely the men selected to run the business for the stockholders, who are the real owners.

The report discussed the marked change in the earning power of money, giving general increase of return to investors. Under post-war conditions new capital was costing the utilities approximately 9 per cent, so that while it was true that in California an allowance of 9 per cent on new capital has been made, this barely met the actual cost of the money, leaving nothing to the stockholder for his assumed risk. It was suggested that not only should a still larger return be allowed on new capital obtained under such conditions, but also that the 8 per cent rate upon old capital should be increased to a point where it would be more in keeping with the return open to the private investor in equally safe enterprises.

Under the heading of public ownership the report discussed the freedom allowed municipally owned utilities in an invasion of territory already adequately and reasonably served as against the restrictive policy adopted toward the so-called private utilities. "This," said the report, "amounts to a denial of the equal protection of the laws in contravention of the Federal Constitution and should be remedied either by legislative action or judicial decision."

The committee on legislation and taxation, Geo. L. Myers, chairman, presented a report discussing recent enactments by the legislatures of the Pacific Coast States. The following recommendation was made: "It is entirely apparent that the cost of government has increased in each State and for the Federal Government at a rate most disproportionate to the increase of population and wealth. Therefore, it behooves each one of the industry as well as the Association to take an interest and wherever and whenever possible to take an active part in a new movement to curtail the cost of government. The citizens of each State and the Nation should bestir themselves

in an organized effort to study and find ways and means to effect economy in administration and to restrict the functions of government and to see to it that the expenditures for public works are justified by the economic possibilities.

"There has been a tendency for considerable time to extend the functions of government by engaging in business enterprises and creating bureaus for the regulation of business, which has added materially to the cost of government. The growth of bureaucratic government as a result of regulation is a serious menace. Bureaucracy in government tends to set up a government of men rather than a government of laws, which is contrary to what was construed by those who founded this government to be its intent and purpose. What is needed is not more laws and more regulation but a better enforcement of laws to give us a more simple, responsible and less expensive government and one which more truly conforms to the proper functions of government. The constant encroachment of government upon the liberty of the individual and business is robbing the one of character and the other of incentive."

As a result of this paper the committee adopted the following resolution:

WHEREAS, the securities of the Federal Government heretofore issued have been exempt in whole or in part from the operation of the income tax laws; and

WHEREAS, the securities of the states and their minor subdivisions have been exempt from the operation of such laws; and

WHEREAS, such securities come into direct competition with securities offered by public utilities and other industries subject to the full operation of such laws and thereby materially increase the rates of interest that public utilities and other industries must pay; and

WHEREAS, no part of the income derived from tax-free securities is contributed toward the support of our public institutions or in the payment of our public debt; and

WHEREAS, the present income tax laws give to such tax-free securities and the holders thereof an unfair preference to the prejudice of taxable securities and their holders.

NOW THEREFORE, be it resolved that the Pacific Coast Gas Association urge upon the American Gas Association that it give serious consideration to this problem in order to provide corrective legislation to remove the present inequitable burden of taxation sustained thereby and to make all income from whatever source and in whatever form bear its just proportion of the cost of government and remove the discrimination now existing between governmental securities and those issued by public utilities and other private industries; and

BE IT FURTHER RESOLVED, that a vote of thanks be tendered to the Committee on Legislation and Taxation for the most complete report submitted by it and that all of the recommendations contained therein be approved by this Association.

Mr. Geo. L. Myers, who is assistant to the President of the Portland Gas and Coke Company, was also responsible for

an excellent paper entitled, "Turn on the Light and Have Faith." This dealt in masterly fashion with problems confronting the public utilities today and urged co-operation among the utilities toward the establishment of relations of a proper understanding with the public at large. Among the opportunities suggested for delivery of the message of the utilities to the public to build up their good will were: the press, employees, customer ownership, consumers, civic and commercial organizations, schools, motion pictures, the Chautauqua and good-will advertising.

Mr. Myers thought the Pacific Coast Gas Association should take a hand and knit the gas industry into a unit of common purpose and effort. He thought that the Association and other utilities should pool their talents and resourcefulness and take up the problem of building up a constructive public sentiment from the domain of local to that of state activity, because, as he said, it is the political policy of the State that determines the restraints and requirements of government control.

The paper urged confidence in the sincere faith and fairness of the people. It quoted Mr. Carl D. Jackson, of the Public Service Commission of Wisconsin, and Alexander T. Vogelsang, former Assistant Secretary of the Interior, in expressions of opinion that the public is fair when it understands. It only needs to be informed. Hence, the title of Mr. Myers' paper, "Turn on the Light and Have Faith."

The convention took place, as usual, during the third week of September. On the evening of the closing day the annual banquet was held. This time, with Mr. John A. Britton in the chair, a picturesque ceremony was performed, that of presenting souvenir pins to a number of those whose names appear on the roster of past presidents of the Pacific Coast Gas Association since its inauguration in 1893 to the present day. Some of the names on the roster are of men who have passed on, and of those who live, not all were able to attend. But eleven past presidents were on hand, and notable among these were two who have been identified with the progress of the gas industry for the greater part of their busy lives, namely, Mr. John Martin and Mr. C. O. G. Miller. Others who responded to the call were Messrs. John Clements, F. A. Leach, Jr., William Baurhyte, C. B.

Babcock, J. D. Kuster, F. A. Cressy, Jr., A. B. Day, Wm. M. Kapus and John A. Britton. One and all responded with a few appropriate words of appreciation. There was also the usual entertainment of song, dance and speech-making.

There was out-of-door entertainment during convention week. Mr. J. D. Kuster was head of the golf committee. The men's handicap was won by W. M. Thompson, who in order to capture the cup had to shake off a tie with Wm. Argobrite. The novices' contest was won by L. Cing-Mars, and the ladies' putting contest by Mrs. C. P. Cutten. The outing on Friday was at Pebble Beach Lodge. It was glorious weather and everyone was in trim.

Altogether the outing was, as all such outings are at Del Monte, one of undivided joy. Santa Barbara was selected as the convention city for next year. A resolution was also passed in recognition of a World's Exposition to be held in Portland, Oregon, in 1925, and recommended selecting that city for the place of convention in that year.

After many years of faithful service to the Association in minor capacities, Mr. Henry Bostwick, San Francisco division manager of "Pacific Service," has succeeded to the presidency of the Association. His board of officers includes: Vice-President, F. S. Wade; Secretary-Treasurer, W. M. Henderson; Directors, John A. Britton, San Francisco; W. H. Barton, Portland; L. M. Klauber, San Diego; Geo. L. Myers, Portland; Wm. Baurhyte, Los Angeles; John Keillor, Vancouver; R. G. Logue, Los Angeles.

It did not take long for President Bostwick to get on the job, so to speak, for within a very short while after his assumption of office he announced the following appointments of various committees:

Arrangements Committee; chairman, F. H. Bivens, Santa Barbara; Meetings Committee, chairman, F. S. Wade, Los Angeles; Accounting Committee, chairman, O. L. Moore, Los Angeles; Commercial Committee, chairman, R. E. Fisher, San Francisco; Technical Committee, chairman, E. L. Hall, Portland; Experience Committee, chairman, John Clements, Oakland; Wrinkle Department, chairman, Jas. E. Kelley, Stockton; Library, librarian, W. M. Henderson, San Francisco; Publicity, chairman, F. S. Myrtle, San Francisco; Gas Engineering Degree, chairman, John A. Britton, San Fran-

cisco; Public Relations, chairman, Frank A. Leach, Jr., San Francisco; Membership, Northern Section, chairman, W. H. Barton, Portland; Membership, Southern Section, chairman, J. A. Somers, Long Beach; Membership, Central Section, chairman, Frank C. Packer, San Francisco. Affiliated with Joint Committee on the Efficiency and Economy of Gas of the Railroad Commis-

sion of California, chairman, F. S. Wade, Los Angeles. Affiliated with American Gas Association: Accounting Section, C. L. Moore, Los Angeles; Commercial Section, R. E. Fisher, San Francisco; Manufacturing Section, H. R. Basford, San Francisco; Technical Section, E. L. Hall, Portland; Advertising Section, F. S. Myrtle, San Francisco.

Papers and Committee Reports Presented

By W. M. HENDERSON, Secretary of the Association.

Accounting Committee Session: Chairman A. P. Parratt is to be credited with good taste and a well developed sense of what is good instructive entertainment. The program that was prepared under his supervision contained subjects that were of daily concern to the department interested. Some of the papers had a touch of tomorrow in them.

The first paper to be presented was prepared under the direction of F. C. Ingram, and covered the subject, "Mechanical Booking of Consumers Accounts." This is a method that is abreast of the times. Gas companies are beginning to take notice of the possibilities along this line. They have observed the value to be derived from other machine equipment and now are easy to interest in such advanced methods as suggested by Mr. Ingram.

Next the Northwest showed the way to better efficiency in office methods through a paper presented by C. W. Platt, of the Portland Gas and Coke Company, on "Mechanical Cost Accounting." This was a very well prepared paper and accompanied by good exhibits. The handling of all material and supplies as well as labor is done by machine. Such a method permits an immediate statement of costs on any job at any moment during the progress of the work. The office methods of the Portland Gas and Coke Company stand high in the esteem of utility accountants.

A very interesting and useful idea was presented in the paper prepared by H. W. Beekman of the Pacific Gas and Electric Company. This was on the "Advan-

tages of Combining Gas and Electric Consumers Registers." For a combination company operating gas and electric service there is nothing in the office line that can be of more economical value. The paper presented a method of using a double line entry, one for each class of service. Ideas and practice were shown where a single line was sufficient for taking care of the double account. This paper brought out the further convenience of the single bill carrying both the gas and electric charge. This naturally goes with the combination register.

The subject of valuation and proper accounting of capital charges is one of considerable importance in this era of utility rate regulation. Companies appreciate the necessity of keeping cases on their additions to plant and replacements. Mr. R. E. Crossman presented the method followed by the Pacific Gas and Electric Company in his paper, "The Value of Written Records in Connection with Valuation of Gas Distribution Systems." Mr. Crossman is well qualified to discuss this subject, as he has recently had charge of the gathering of records and data for appraising the distribution system of his company. His paper was well supported by exhibits in the way of forms to be used in general operation of a company. These covered authorization sheets and orders for every class of work that a gas company engages in. That the subject is of interest and its value appreciated was illustrated by the discussion that developed.

Technical Committee Session: Mr. E. L. Hall, chairman of the committee, as-

sumed the responsibility of presiding over the session. The committee first presented its report, which covered in a brief way the outstanding problems confronting the gas man today. On each such problem some constructive comment was made or recommendation for further investigation.

The committee took up the question of an investigation of gas making oil, with a view of determining the possibilities of using the heavy refinery residues of Mexican crudes.

It was recommended in the report that the coming year's work should include further study and research into the conditions that control the removal of naphthalene by oil washing.

The question of unaccounted for gas received its just attention and it was the sense of the committee that a study of the subject be made with the idea of determining the various factors that control this constant source of loss.

Electrolysis also received notice and a recommendation made to the incoming committee to give it attention during the forthcoming year.

Two papers that were presented before the convention were on subjects that the committee gave attention to in its report, namely, "The Economies of Generating vs. Holder Capacity," and "The Standard Specifications for Protecting Steel Pipe by Dipping and Wrapping." The committee drew attention to these subjects, as each covers a problem that is coming closer to us with the expansion made by the industry.

There has been more or less agitation along the Pacific Coast on the question of proper specifications for installation of gas appliances. The committee acknowledged the desirability of some constructive work along this line and recommended that regulations and specifications be drawn that will provide for safety and satisfactory operation.

Following the report the presentation of prepared papers was in order. Mr. L. M. Klauber led with the paper, "Protective Covering for Steel Pipe." This was a most interesting presentation of a matter that is of importance to every user of steel pipe. At San Diego, where Mr. Klauber is general superintendent, steel pipe is extensively used, every bit of it asphalt dipped and wrapped before installation. The method adopted has reached a high degree of perfection and the results obtained have certainly

justified the method. The tables and figures contained in the paper on quantities, production and cost of output will be useful for reference. Mr. Klauber's paper will certainly deserve re-reading and preserving.

The question of whether gas holder capacity is more desirable than generating capacity is not necessarily new, but it has never received much attention at our conventions. This year, however, it was brought to the front in a paper prepared by J. M. Dickey, engineer of gas production at San Francisco. During recent years gas plant construction has been somewhat held back, first due to the war and then to the high costs of such construction. Now that plants are in so many cases up to capacity and increases in capacity are necessary, this subject immediately presents itself. What is the most desirable is not so easily determined from the position of an oil gas operator. If it were only a matter of installing a gas generator as compared with a storage holder there would be no difficulty arriving at an answer. However, since the generator plant includes all the accessories, boiler capacity as well as purifiers, the complete cost very nearly offsets the installation of holders. From an efficiency point of view the operation of the plant would be possibly more economical if holder capacity were sufficient to allow continuous operation.

"Old Age Meter Changes" was the title of a paper prepared on the basis of observations made by Mr. C. R. Miller, of Portland. This paper created by far the greatest discussion of any presented. There is a vast difference of experience on this subject and final settlement will no doubt have to be postponed until further facts or conditions at other places than Portland are noted. So far as Portland is concerned, the paper illustrated the fact that meter changes should not depend upon any fixed period. The evidence in the paper indicated that ten years was more nearly the active life of the average meter under the conditions met with at Portland. It is hard to imagine that any fixed provision for meter changing will ever prove satisfactory or economical. Meters are used under such varying conditions of load and installed under such different conditions that time is not the only factor that affects their accuracy.

At the afternoon session on Wednesday the Technical Committee put on the

feature of its program. This part of the session was introduced by the presentation of the paper prepared under the direction of Mr. E. L. Hall, the result of observation made by S. H. Graf. It reduced to facts and figures the possibilities of high efficiency from the operation of an oil gas set. A complete study of the thermal efficiency of the gas generators at the Portland Gas Works has been carried on during the last summer. Much of value has been determined and from the facts now at hand the direction of proper progress can be determined. Heat balances, weight and quantity balances were all worked out. These are so well presented in the paper that any abstract comment on its contents here is difficult, as the whole of the paper would be necessary to tell the story.

In connection with the above paper the report of the Joint Committee on the Efficiency and Economy of Gas was presented. This committee has now been constantly engaged for a period of over one year and a half in the study of its subject. The report at this time was not conclusive as to its findings, as it still has considerable of its program before it. Nevertheless, the past work has uncovered a deal of interesting facts. The report in as condensed a manner as possible presented the results to date. If we consider all the angles involved in the matter of what calorific value is best to distribute we appreciate the difficulty of arriving at a conclusion. This committee is the only one in this country, if not in the world, that has given the subject the exhaustive study that it deserves. A paid field force is engaged constantly on observations; these include plant operation, laboratory tests, appliance tests and a study of actual results obtained by consumers, the gas under investigation varying all the way from 480 B. T. U. to 600 B. T. U. All this is brought out in the report and in view of such we can well give heed to any conclusions or facts offered.

The report was presented by Mr. L. S. Ready, chairman of the joint committee. The reading was supported by numerous slides, illustrating the field work and tables and curves showing some of the results obtained in production and utilization of different gases. On the whole, it was the best presentation of work well done that our Association has had the pleasure to receive.

Commercial Committee Session: A big program greeted the assembled gas men on the final day of the convention. Chairman Frank Weiss presided. The list of papers and reports covered the subject from end to end. The new infant industrial gas ushered in the session.

"Gas for Galvanizing," by C. M. Roberts of Los Angeles. This paper reviewed the art and practice to date and gave some valuable facts for reference when prospects are available.

"Gas for Candy Furnaces," by J. Beveridge. The subject was of special interest, as this class of business is rapidly getting established. Candy making has taken a tremendous forward step during the past few years. The gas industry is not slow to appreciate the service it can be to the maker of sweets, and the thoughts presented in Mr. Beveridge's paper will prove of service to men who seek this class of business.

"The Sale of Gas Furnaces for Heat Treating Steel and Forging," by John B. Redd. The author is so well grounded on his subject that it is a valuable contribution to the commercial men to get a paper from him. This paper will serve as good reference on the use of the furnace as well as containing words of wisdom on salesmanship when visiting the class of trade that will be interested in this appliance.

The very foundation of the gas business, the service that made its existence possible, was given a place on the program. This was a paper dealing with the subject of illumination and carried the title, "Maintenance and Stimulation of Gas Arc Sales." It was prepared by Mr. Frank Talcott, new business manager at San Francisco. The gas arc serves a purpose in the scheme of things. There will always be more or less demand for this source of illumination, and a gas company should be prepared to render the service. Mr. Talcott urged the active solicitation of new business and suggested numerous means of securing same. His ideas were good and worthy of attention by sales departments of companies active in pushing the use of gas arcs.

A phase of the business that has developed enormously in recent years was given time for the presentation of two able papers. The first, "Gas Fired Boilers for Heating," by M. L. Page; the second, "Warm Air House Heating," by J. B. Smith. This subject of home heating is at this

moment of greater interest to the average gas company than any other service that gas supplies. By successful and convenient methods of warming homes the gas industry will endear itself to the public as it can by no other means. It is in its very nature a very desirable load, as it continues over quite a period of time and through many hours of the day. Its peaks are not sharp, though the total demand from this source for gas, if developed like the domestic cooking business, would be very near double.

A report on advertising was presented by G. D. Mantle. This told everything there was to say in the matter of advertising the gas business. In fact, it was an advertisement on advertising and a positive one at that.

The best of the commercial papers was left to the last. Mr. Geo. P. Egleston presented his paper on "Stimulating Gas Sales and Compensation of Salesmen." The ideas embodied in this paper are valuable; suggestions as to how to handle selling organizations, create sales and card index salesmen were all a part of

the text. Abstracting does not do it justice; it must be read to be appreciated and in order to get full value. The matter of salesmen's compensation should be given attention, for the gas business must be sold and stay sold as any other commodity. Able salesmen are very necessary. All these facts are brought out in the paper.

COMMITTEE ON GAS ENGINEERING DEGREE

Mr. John A. Britton, chairman of the Committee, presented a report recommending that the fund now held idle and in the hands of the University of California be put to use. The suggestion made provided for use of the accumulated annual interest, a sum approximately \$500.00. This to be devoted to scholarships or fellowships in Engineering, Physics and Chemistry on condition that the researches made by holders of scholarships relate directly to the general field of Gas Engineering. It is intended to hold the principal sum intact to be utilized in a direct course in Gas Engineering to be developed in the future.

The Utility Investment

(From "My Business" "Your Business" and "Our Business," a Hand Book Published by Illinois Committee on Public Utility Information, Chicago, Illinois.)

Any community's biggest single investment is in its utilities—its electric, gas, electric railway and telephone equipment.

To give a community service it is necessary for the utility company to invest \$5 of investors' money in plants and equipment for approximately each \$1 of gross revenue, in the form of sales of service, it may expect back in a year's time. No other business in any community is conducted on so slow a turnover. In other words, an individual can engage in any other business on much less capital than he can in the utility business.

Once in the ground, utility property is as much a part of a community as its sewers, sidewalks or streets, and just as readily usable by all residents of it as are the latter.

If it is necessary for this property to be expanded—new gas pipes to be laid; more telephone wires to be strung, instruments and switchboards to be put

in, electric light and power lines to be extended, street car lines to be built—in order to meet the public demand for service, the same thing must be done as when sidewalks are built, or sewers put in.

The utility must go out and get the money to buy the material and pay for the labor. It is in the same position as the city which goes into a bank to borrow money. If its credit is good it gets a loan. If it isn't, it doesn't. If it doesn't the new improvements aren't built. It is just the same with the utility. If new additions to plant and extensions of facilities are asked for, the utility has to go out and borrow the money. If it cannot show it is entitled to credit—entitled to borrow money because of its financial soundness and ability to pay the going rate of interest—it doesn't get the money, as no one will take "a bad note." The result is the extension isn't built and those who want service (meaning the public) don't get it.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION



The Mardi Gras Ball turned out the best our San Francisco division afforded.

San Francisco section celebrated its first anniversary with a Mardi Gras ball held at the Fairmont Hotel on the evening of October 1st. The event had created widespread interest and, as a result, fully fifteen hundred persons enjoyed themselves as participants and spectators, among whom were many of the P. S. E. A. family from out of town who had journeyed to the metropolis for the week-end in order that they, too, might enjoy the fun.

The ball room of the Fairmont Hotel certainly presented a gorgeous scene as those in costume congregated before the grand march was formed. It was a splash of color, costumes of all designs and each one carefully carried out to fit the character intended. It seemed as if all corners of the planet were represented. And, to add atmosphere, the grotesque in costume mingled with the spectacular, and there were some amusing individual "stunts."

Promptly at 9:15 p. m. the bugle

sounded and the grand march was formed, headed by Messrs. Henry Bostwick, San Francisco division manager of "Pacific Service;" and J. A. Johnson, chairman of the local section of our Association, with the following members of the committee: Messrs. J. Potter, gas manufacturing department; W. McLaughlin, new business; A. Gudehus, bookkeeping; Ed. Ford, electric distribution; Ed. Woods, gas distribution; J. Marshall, records; James Dickey, gas manufacturing; John Gilbert, electric engineering; G. S. Tracy, new business; C. Larrabe, electric distribution; C. Suydam, division manager's office; Phil Ritter, electric distribution; Miss Vollmer, division manager's office. Then came the queen and her court. The queen was impersonated by Mrs. James Kearny who, until very recently, was Miss Elizabeth Cox of the Potrero gas plant. Queen Elizabeth was not only a beautiful but a very charming queen, and she graced the occasion in right regal fashion with the

assistance of her ladies-in-waiting, the Misses Looney and Hanson and Mrs. Dixon, and her two pages, Misses Neville and Allart.

A throne had been arranged at one end of the room for the coronation ceremony, which was performed by Division Manager Bostwick. Mr. Bostwick made some very appropriate remarks as he outlined the remarkable growth of our association, touching upon its beginnings and noting with pride and pleasure its development and far-reaching strength and the benefits derived from membership in it.

Chairman Johnson made some program announcements and then Queen Elizabeth commanded that the dancing begin. And joy did reign supreme. It was interrupted but once for a brief intermission in order that the spectators might enjoy a tango, executed by Miss Alma Tillie and Mr. Robert Foster in a manner which would do credit to professionals. Then the dancing and fun was resumed and continued until midnight.

The committees in charge of the affair are deserving of much credit for their work in bringing about such an enjoyable and successful event. It is needless to say that San Francisco section has added another accomplishment to its history. Credit, too, is due to all who participated. Space does not permit a description of the costumes worn, but it may well be said that each was a credit to the wearer, and the spectacle, as a whole, presented a picture which will long be remembered by those present.

A pretty compliment to the queen and her court was a dinner given in the gray room of the Fairmont prior to the ball. The tables were beautifully



Division Manager Bostwick performed the ceremony of crowning the queen.

decorated and the guests enjoyed dancing during the dinner course, it being the opening night of the dinner dances at the Fairmont.

San Francisco section were hosts at an outing to Paradise Cove which took place on the day following the Mardi Gras Ball, Sunday, October 2nd. Five large launches had been chartered and bright and early in the morning a happy crowd was on hand at Crowley's Wharf all ready for the first trip, which left at 9 o'clock, other trips following at 10 and 11 o'clock.

The day was beautiful and the picnic spirit pervaded everywhere as evidenced especially in the trips over and back in singing and merrymaking. Upon arrival at the park some enjoyed dancing, while others strolled about. But the main event of the day was the barbecue, which took place at noon. Preparations had been made to feed fully nine hundred persons and this was done, too, in record time. The hospitality of San Francisco section was seen in everything, there were good things in plenty, and it goes without saying that



Miss Alma Tillie and Mr. Robert Foster danced the tango.



On the beach at Paradise Cove.

everyone enjoyed the feast, which included barbecued meat, potato salad, olives, bread, coffee and cake.

In the afternoon most of the guests enjoyed dancing, while others took in the beauties of Marin County until the late afternoon, when the homeward signal was given.

The first annual outing of San Francisco section was over and its success was beyond a doubt, for all who were there are eagerly looking forward to the next annual event.

The educational features of our association activities are growing in favor every day. Our educational committee reports that in response to advance information sent out to divisional educational chairmen during the month of September the committee received enrollments from all but two divisions. These enrollments represent 114 individual classes, 52 towns or stations, and cover 6 different subjects. The classification follows: accounting, 254; commercial and sales, 90; electric, 319; gas, 67; hydraulic, 41; steam, 84; total 855.

Enrollments from the two missing divisions as well as from those divisions that have made only partial returns will considerably increase these figures.

The committee reports that in addition to the classroom courses it has available 30 popular lectures or motion picture reels, and there are 6 more in preparation. Of these 36 lectures 16 are prepared by members of the P. S. E. A., the balance coming from manufacturers' agents, correspondence schools and the University of California. Through the courtesy of the General Electric Company the committee is also able to offer 60 illustrated lectures and 38 motion picture films, all dealing with electrical subjects, any of which can be obtained through the chairman of popular lec-

tures, Mr. E. C. Wood. The committee has sent the following outline of its educational course program:

"The Pacific Service Employees Association in undertaking its educational program has for its purpose the offering to employees of this company an opportunity for self-improvement.

"Two methods are offered: (1) Study courses. (2) Popular lectures.

"Study courses will cover the following general subjects: accounting, commercial and sales, electrical, gas, hydraulic and civil, steam and mechanical. These general subjects are in some cases subdivided into groups called 'courses' for convenience in study.

"Classes should be organized in groups, each group electing its own leader and deciding upon a time and place of meeting.

"Meetings should be held at regular intervals, not more than a week apart, and it should be the duty of the leader to keep a record of attendance and the grade of each student.

"The class should follow, in general, the plan of study prepared by this educational committee. It is recommended that about an hour be devoted at each meeting to reading and explanation of the text, illustrated, where possible, by blackboard work, during which the leader should ask questions of the class and the class, in turn, may also ask them. Afterwards the meeting should be thrown open to discussion of the topic or topics relating thereto, and members of the class should be prepared to enter actively into the discussion.

"So far as possible the courses as prepared will be complete in themselves, but in some cases it will be necessary for each student to have a textbook, and the leader of the class will be provided with the necessary reference book. In all cases it is essential for effective results that the students do a certain amount of reading between meetings, and naturally the more they do the more benefit they will derive from the course.

"As fast as courses are prepared and printed they will be forwarded from the educational committee direct to the class leader. These courses will supplement the textbook (when same is used), and in the case of the technical courses will provide for problems and test questions as well as specific examples applying to apparatus in use on the Pacific Gas and Electric System.

"Written tests should be given from time to time during the course, and members of the class may correct one another's papers. Debatable questions may be referred to the chairmen of the various courses, the names of whom appear in the outline of said courses.

"Lantern slide lectures and 'talks' prepared by specialists in various subjects will be introduced from time to time as they apply to the various courses. Such lectures or talks could occupy the time immediately following the meeting, or could, at the discretion of the leader, take the place of the class instruction for that particular evening."

The accounting courses are under chairman D. G. Martin, auditing department; the commercial courses under R. E. Fisher, manager commercial department; the electric courses under J. P. Jollyman, chief of the division of hydro-electric and transmission engineering; the gas courses under W. M. Henderson, engineer gas distribution, San Francisco; hydraulic courses under R. A. Monroe, assistant engineer, department of engineering; steam and mechanical courses directed by C. H. Delany, assistant engineer of operations; the popular lectures, as before stated, under chairman E. C. Wood, superintendent garage; last but not least, accident prevention and safety by V. R. Hughes, safety engineer.

PACIFIC SERVICE EMPLOYEES HOLD MONTHLY PARTY

(The following is from the "San Mateo News," issue of September 30th.)

The Pacific Service Employees' Association of the Pacific Gas and Electric Company held their regular monthly social and dance last Tuesday evening at the Knights of Columbus Hall. About seventy-five members assembled early in the evening to be entertained by H. S. Lane of San Jose, who delivered a most interesting and instructive lecture on "electricity," which he illustrated with colored stereopticon slides, and then Otto Wanek of the Pacific Telephone and Telegraph Company puzzled his audience with several very clever tricks in magic. The entertainment lasted until 10 o'clock, after which the floor was cleared and dancing continued until 1 a. m.

The P. S. E. A. is composed of "live wire" men and women, who believe in the joyful side of life as well as the serious, and their socials and dances are always interesting and enjoyable. The

three-piece orchestra furnished by Frank McAuliffe, of Redwood City, was exceptionally fine last Tuesday night and the dancers were loath to break up the party at 1 o'clock. Refreshments were served at midnight, adding a bit of "homeyness" to the affair.

Monday evening, September 19th, was educational night for the members of East Bay section. Mr. Yost, from Mr. Jordan's office, explained hydro-electric generation to a large audience in the office of the Electric Distribution Department, 518 13th Street, Oakland. At the conclusion of Mr. Yost's lecture Mr. Jordan expressed his appreciation at seeing such a large number of employees come and take an interest in the educational meetings.

ASSOCIATION ATHLETICS

On Friday, September 30th, the members of San Francisco division basketball team held their first meeting in preparation for the coming season.

The squad this year consists of Messrs. S. Dukell, H. Hardege, W. Mulford and Ed Wood, of the gas distribution department; H. Gerber, electric distribution department, and C. Ebbecke, Jr., machine shop, and as this is practically the entire team that so successfully represented the division on the courts last year great things are expected of San Francisco for the season of 1921-22. The only absent member is Mr. O. Anderson, formerly of the purchasing department, who has left the company. His absence is to be regretted.

Mr. Mulford was elected manager and Sherman Dukell was elected to continue as captain. The team will go into practice shortly in preparation for the San Francisco Industrial League tournament, of which this Association is a member, and all aspirants for a position on the team should communicate with manager Mulford at once in order that they may be advised of practice dates, etc. Practice will probably be held at the Y. M. C. A. or Olympic Club courts.

The Athletic Committee was most agreeably surprised when twelve young ladies signified their intention of coming out for the girls' basketball team, and as these names were secured by Miss Helen Vollmer in less than four hours, the Athletic Committee hopes to have not

less than two complete girls' teams. The men folks will have to go some to equal this showing.

The girls' team will practice at the Y. W. C. A. and all young ladies wishing to try out should communicate with Miss Vollmer, who, as chairman of the Committee on Women's Affairs, will have charge of women's athletics, in order that their names may be placed on the mailing list for advice of practice dates and necessary arrangements for securing uniforms.

The Industrial League's Girls' basketball tournament last year was a great success and was enthusiastically participated in by teams representing many San Francisco industrial concerns. It was finally won by the girls of the Zellerbach Paper Company. It is hoped that from the number of employees in this Company a team may be put on the field that will "bring home the bacon." The girls registered to date are:

Miss A. Dale....Gas Dist. Dept.
Miss E. Neville...Potrero Station
Miss Zavita....Valuation Dept.
Miss Zurcher....Addressograph
Miss Scally....Addressograph
Miss Kilgour....Addressograph
Miss Schuler....Addressograph
Miss Thorenson...Addressograph
Miss Guntern....Addressograph
Miss Maguire....Addressograph
Miss Conlan....Addressograph
Miss Larsen....Addressograph

Three cheers for the girls' team! Now let's go!

Too much cannot be said for the manner in which San Francisco division baseball team was handled by Harry Hardege and Louis Melbourne, the team winning the championship of their division of the San Francisco Industrial

League by being on the long end of the score of eight straight games. The only regrettable feature was that they were sorrowfully short by way of rooters, but regardless of the lack of encouraging lungs they managed to secure more than the necessary number of runs in every case.

The Pacific Gas and Electric "Nine" is continuing on by way of entry into the mid-winter league, and it is hoped that their showing in this league will be as good as that made to date. The team consists of the following:

Barthol1b
G. Hendersonmascot
R. Barrazalf
A. Corbettss
V. Corbettp
M. Harrisrf
H. Hardegecaptain
J. Schlockerp
J. Hervieu2b
J. Clarkcf
W. Silvasc
R. Chaffantlf
Spoon3b

With our entry into the San Francisco Industrial League every opportunity will be afforded us to enter all branches of sport at an exceedingly small expense to the Company, and in order that we may ascertain the athletic inclination of all of the employees, any employee interested in any particular branch of sport should communicate with the chairman of the Athletic Committee.

The basketball games will be very interesting from a spectators standpoint and it is hoped that both the men and women teams will receive the proper support by way of attendance.

HARRY L. ECKENROTH.



The Financial Side of "Pacific Service"

Following is condensed approximate income account statement for the month of September, 1921, compared with the same month last year:

CONSOLIDATED INCOME STATEMENT (Including operations of Mt. Shasta Power Corporation)

MONTH OF SEPTEMBER

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income	\$ 3,191,863.82	\$ 3,139,875.01	\$ 51,988.81	
Maintenance	245,082.89	243,257.65	1,825.24	
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts	1,732,581.32	1,926,665.09		\$ 194,083.77
Total Expenses	\$ 1,977,664.21	\$ 2,169,922.74		\$ 192,258.53
Net Income	1,211,199.61	969,952.27	\$ 244,247.34	
Net Interest Charges	391,803.55	391,448.22	355.33	
Balance	\$ 822,396.06	\$ 578,504.05	\$ 243,892.01	
Bond Discount and Expense	33,266.49	30,064.68	3,201.81	
Balance	\$ 789,129.57	\$ 548,439.37	\$ 240,690.20	
Reserve for Depreciation	283,333.33	233,003.72	50,329.61	
Balance to Surplus	\$ 505,796.24	\$ 315,435.65	\$ 190,360.59	
Dividends Accrued on Preferred Stock	188,977.64	153,673.15	35,304.49	
Balance	\$ 316,818.60	\$ 161,762.50	\$ 155,056.10	

The cumulative effect of the constant addition of new customers in over-coming influences which have caused declines in gross operating revenues during the preceding two months is reflected in the increase of \$51,989 in this account during the month. The addition of customers in September was 3,568, by far the best record of any month this year, bringing the total net gain of customers for the first nine months up to 19,569. The gain in the twelve months' period was 30,370, making the total number of customers served at the close of September 588,928.

The increase of \$244,247 in net income in September, and of \$1,738,595 in the nine months to September 30th, 1921, is attributable—First, to the Company's larger investment, its Plants and Properties Account in the interval covered by the foregoing and succeeding comparisons having increased \$24,245,000, of which, however, a substantial portion is still tied up in construction work in progress, which is not yet in a revenue-producing stage; and second, to decreased operating expenses made possible by lower oil prices, better water supply, and the bringing in recently of 43,566 h. p. of additional hydro-electric energy from the Spring Gap plant and the two small initial plants on Pit River. Notwithstanding this, the Company's operating ratio is still about 15 per cent above pre-war levels owing, in a large measure, to greatly increased State and Federal taxes. Statement for the nine months' period follows:

NINE MONTHS TO SEPTEMBER 30TH

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income	\$28,238,141.94	\$25,605,676.84	\$ 2,632,465.10	.....
Maintenance	2,494,021.44	1,945,349.37	548,672.07	.....
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts	15,481,833.96	15,136,635.59	345,198.37	.....
Total Expenses	\$17,975,855.40	\$17,081,984.96	\$ 893,870.44	.....
Net Income	10,262,286.54	8,523,691.88	1,738,594.66	.....
Net Interest Charges	3,612,972.83	3,366,339.66	246,633.17	.....
Balance	\$ 6,649,313.71	\$ 5,157,352.22	\$ 1,491,961.49	.....
Bond Discount and Expense	292,389.56	216,343.60	76,045.96	.....
Balance	\$ 6,356,924.15	\$ 4,941,008.62	\$ 1,415,915.53	.....
Reserve for Depreciation	2,550,000.00	2,090,449.70	459,550.30	.....
Balance to Surplus	\$ 3,806,924.15	\$ 2,850,558.92	\$ 956,365.23	.....
Dividends Accrued on Preferred Stock	1,621,080.29	1,355,496.26	265,584.03	.....
Balance	\$ 2,185,843.86	\$ 1,495,062.66	\$ 690,781.20	.....
Dividends Accrued on Common Stock	1,275,152.17	1,275,152.17	.....	.....
Balance	\$ 910,691.69	\$ 219,910.49	\$ 690,781.20	.....

Work on the Company's Pit River Plant No. 1 is progressing so rapidly that its completion by the middle of next year is confidently anticipated. This plant will have a capacity of 93,000 h. p., entirely independent of storage and will be the largest single hydro-electric plant in the State of California. A two-mile tunnel with circular diameter of 14 feet is the most important construction feature of this plant. The bore of this tunnel is 80 per cent completed. No water or other difficulties of any kind have been encountered. Work on this plant and others in contemplation along Pit River will be greatly expedited and rendered more economical by the Company's 35-mile railroad recently completed from Bartle, the terminus of the McCloud River Railroad, to the Pit River section. The additional hydro-electric energy which will be available after the completion of this large unit will tend further to bring the Company's operating ratio back to normal.

The Company's cash position, notwithstanding heavy construction expenditures, is very satisfactory, the cash balance at the close of September standing at approximately \$5,000,000. Sales of First Preferred Stock directly to the Company's customers have helped materially to bring about this situation. Sales in October aggregated \$983,300, making the record for the last sixteen months \$9,880,900, and \$24,672,300 since the Company instituted its policy of public partnership in June, 1914. The number of stockholders at this time exceeds 18,000. Of the last issue of \$2,000,000 par value of this stock authorized a few days ago by the Railroad Commission, one-third has already been sold. It will be noted from the above income account statement for the nine months of the current year that dividends on this Preferred Stock were earned two and one-third times, with a margin of \$2,185,844 over the total dividend requirement for the nine months of \$1,621,080.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF
THE PACIFIC GAS AND ELECTRIC COMPANY

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*The Pacific Gas and Electric Company desires
to serve its patrons in the best possible manner.
Any consumer not satisfied with his service
will confer a favor upon the management by
taking the matter up with the district office.*

VOL. XIII OCTOBER, 1921 No. 5

EDITORIAL

The policy of taking the public into its confidence, of spreading its cards on the table, so to speak, in order that the fullest information concerning its activities may be available at all times, is unquestionably an essential feature of efficient public utility management. It is the policy of every well conducted utility in the land today.

It was in pursuance of this wise policy that a series of articles entitled, "That the Public May Know," were issued from our company's headquarters some months ago. They were the work of our president, Mr. Wigginton E. Creed, and were devoted to an exploitation of the very fundamentals of public service management. These have since been issued in pamphlet form and the public demand for them shows that they were not composed in vain.

And now comes our company management with a series of stockholders' meetings being held in every section of the "Pacific Service" territory, for the further enlightenment of the public by personal contact with those upon whose shoulders lies the responsibility of handling the grave problems confronting the public service. The purpose of these meetings may be gathered from the following excerpt from the printed invitation issued to stockholders:

"It is the desire of the executives of this company to acquaint its stockholders by personal contact with the very satisfactory condition and progress of the company, and also the problems which daily confront the management in the conduct of a public utility company.

"The future prosperity of this State is so interwoven with the development of hydro-electric plants for generation and distribution of electricity that it has been deemed advisable to make you better acquainted with the general program of the company, involving the extensions of its present existing systems by the building of new power plants and transmission and distribution lines, as well as to inform you of the part that the manufacture and distribution of gas and the distribution of water bear to our entire business.

"This involves discussion of matters not only of operation but of finance involved in construction and operation."

Already several of these meetings have been held. There being some 18,000 stockholders, the company has divided its territory into zones so that an average of from 300 to 500 attend each meeting. They have been remarkably successful, so far, in the earnest attention paid to addresses made by President Creed, Vice-President and General Manager John A. Britton and Second Vice-President and Treasurer A. F. Hockenbeamer, each of whom instructs his audience upon matters engaging his particular personal attention.

This is indeed a pioneer movement in corporate management, as President Creed explains. "In a public utility company such as the Pacific Gas and Electric Company, which is owned by so large a part of the public, mostly Californians, there is every reason for the executives of the company, in accordance with their policy of complete frankness, to go to their stockholders and furnish them with pertinent facts regarding the company and its business.

"Customer ownership is the best public ownership, and the thousands of stockholders of the Pacific Gas and Electric Company represent so large a part of the public that better and wider knowledge of the company's affairs cannot help but be serviceable both to the company and to the public."

These meetings are attracting widespread interest. It is expected they will occupy the balance of the fall season.

Upon this question of customer ownership much has been said, in print and by spoken word, and so far, all of a favorable character. In fact, it is difficult to see how even the ever resourceful political agitator can find argument to combat the customer ownership idea. It has been accepted by all prominent writers of the age upon economic subjects, a majority of whom, indeed, claim that the only sort of public ownership of public utilities which can be successful is the ownership by the public of the securities of the companies which serve it. In an article on this topic which appeared in a recent issue of *Public Service Management* it is stated: "In this way and only in this way can the people achieve public ownership without loss or impairment of service, and without suffering the ill effects which inevitably follow the mixing of politics with utility affairs."

As a matter of fact, it seems to us that it is directly to the advantage of the public itself to have an interest in the public utility operating in its midst. It is along the line of self-interest, so to speak. It has been stated over and over again in these columns and elsewhere that the prosperity of any community is dependent to a very large extent upon the success of the utilities operating within it, that the two go hand in hand and are interdependent.

In an address before the National Electric Light Association convention at Chicago this year, Hon. James A. Perry, President of the National Association of Railway and Utilities Commissioners, said:

"The public has a special interest in the expansion of utilities because a city can never grow faster or extend farther than her utilities reach. The utilities of a community are the greatest developers any city ever had. No city can build beyond the lines of her street railroads, and this is true to a degree in comparison with the area covered by gas mains.

"Few sections of this country can finance utility development of any kind from local capital. The financial necessities of the development, therefore, carry us to foreign fields for money. Is there a man anywhere, regardless of his business interest, with surplus money for utility investments, who is going to send his money into communities where there exists a citizenry hostile to foreign capital for such investments?

"The public has an interest in seeing that such conditions do not exist; it has an interest greater than the selfish interest of the few who would stop the utility development of every community while their political ambitions are satisfied or a personal grouch is assuaged."

A NEW ATTITUDE

(From the Davis "Enterprise," issue of October 7, 1921)

Has it ever occurred to you that there is a general change in the relationship of the big corporations and the general public? It was not long ago that genuine antagonism reigned between the two and we are not so sure but what cause existed for this state of affairs. However, a moment's contemplation puts a new phase on the status of things as they are today.

Let us take, for instance, as an example, the Pacific Gas and Electric Company, a corporation that stands first in its service to the general public. Here we find a company that emanates SERVICE from its head officers, down the line to the little crew we have in Davis—a genuine effort to do all in its power, as promptly and as thoroughly as possible, for the benefit and safety of its patrons.

The old cry of "those grafting corporations" has given way to one of a general understanding of purpose. For, after all, a corporation belongs to the people, in a sense, or rather, to a good many of them. And, under State regulation the majority of large companies have progressed both financially and in increased good will.

A feature of the "Pacific Service" organization is its generous attitude to its employees. This is a boast of which the company may well feel proud, for it has not only created increased devotion to the company but has, in effect, reflected that spirit to the public in general.

Its products of gas and electricity have improved living conditions here notably, and the making of the same by the municipality would be out of the question. For, it would entail a great deal of money, and the average community is not blessed with an over-supply of that. So it comes about that the public is gradually coming to accept the public corporation in the light of benefactor, and the same will continue so long as the corporation acts in a friendly spirit toward the people it serves.

Tidings From Territorial Divisions

East Bay Division

That Oakland is regarded as one of the most desirable residential sections of the State is evidenced by the increase in the number of high-class apartments recently constructed, especially in the vicinity of Lake Merritt.

What will be the finest apartment house of California is now under construction on the famous old Schilling Gardens, located on the shore of the lake. The Regillus, as it will be called, is being built by Mr. Palmer, of the firm of Palmer and Peterson, well known construction engineers. Including the spacious gardens to be laid out in a picturesque and oriental manner, the project will cover approximately two acres, the building itself to contain 40 apartments ranging from four to seven rooms each.

The apartment will be modern in every respect, and completely equipped with convenient outlets. In each dining room will be installed a center floor plug to which any electric appliance may be readily or conveniently connected. A modern, completely equipped, electrically operated laundry will be on the premises and a garage has been planned to accommodate fifty automobiles, all cars to be taken care of continuously and the tenants to be billed for the service monthly. Twenty-four hour service will be in effect in the garage. Two passenger elevators, two freight elevators and a dumb waiter will facilitate transportation throughout the building. Sanitation has been a major consideration and each apartment will be fitted with one or two shower baths.

The main consideration has been to establish as nearly as possible a homelike atmosphere, and in accordance with this idea each apartment will be equipped with a spacious fireplace in addition to the steam heating equipment. On one floor there will be forty neat rooms supplying ideal living accommodations for servants.

It is planned to open the Regillus about June 1st next. In its construction only the highest grade materials have been

selected, and it is noteworthy that there will be \$100,000 worth of marble used. When stating that only the highest grade materials and equipment will be selected, we are proud to add that "Pacific Service" will have an opportunity to supply "courteous and continuous" service.

Hundreds of tons of California canned goods are being shipped to the Atlantic seaboard through the port of Oakland. Figures furnished by the harbor development committee of the Oakland Chamber of Commerce show that one steamship line alone has shipped more than 2000 tons of canned goods through Oakland port in one week and that a large quantity of other cargo has also been loaded. The canned goods shipments of this line were: By the Walter Luckenbach, 1100 tons for New York and Philadelphia; by the Katrina Luckenbach, 750 tons for Boston; by the Lewis Luckenbach, 750 tons for New York and Philadelphia.

Some of these canned goods are coming by carload shipments from canneries in the San Joaquin and Sacramento valleys and from Santa Clara and Alameda counties.

Berkeley possesses a new modern market. It is the Schween Market, at 2071 University Avenue. It is a class A building, with complete equipment, delicatessen, bakery, meat market, fruit and vegetables and grocery.

The baking is done in a Middleby oven, fired with a baker's oven gas burner. Together with an Ills portable oven, a restaurant range, two section open type, is used in preparing and cooking the food furnished in the delicatessen.

There is cleanliness everywhere. In completing the finished product, no expense has been spared. The proprietor is Mr. Welf I. Schween.

The farmers around Alvarado and Centerville have for the past year or so planted their acreage to cauliflower and shipping east. After the potatoes and the corn crops are harvested the ground is irrigated and then planted to cauli-

flower in the fall of the year. This crop is harvested along in February and March.

During the last year, approximately 200 carloads were shipped from Alvarado to New York. This experiment has proved so successful that 600 acres have been planted which will be harvested early in the year. Approximately 600 carloads will be sent to the eastern markets. Incidentally, these fields were irrigated with "Pacific Service."

BAKING BREAD IN A BEE-HIVE OVEN

One of the old-type brick ovens, fired with modern fuel. The oven is about one-fifth the size of the Dutch style oven. The shape is on the style of the old beehive, with chimney in front, like the old fireplace. It was built with the intention of using wood fuel. It was necessary to use atmospheric burners, in changing over to gas, as we had no electric power available to use the fan type of burners. Two special pipe burners were made up, using two 1½-inch hale gas and air mixers, extending two 1½-inch pipes about 30 inches into the oven, using two fittings and reducing for burner nozzle. Using the swivel joint connections, we were able to concentrate the heat to all parts of the circular oven and heat the oven to the baking temperature required.

E. B. D.

Sacramento Division

The building spirit is upon us and the lower the cost of building material the higher the proof of the spirit. Today we are looking over plans for many proposed structures that have already been determined upon. I will mention a few. The new Capitol extension we are assured will be under way before Jan. 1st, 1922. This means about \$3,000,000. The new State Printing Office means \$250,000. Virden's new packing and warehouse building will be under way in a very short time. Archie Mull's new 160 x 160 foot two-story building for the use of the State Agricultural Department at 10th and L will begin to rise within 30 days. The determination to erect a City Auditorium, 160 x 320 feet, at a cost of \$500,000, has been practically settled. The location is to be I Street, from 10th to 11th, with the I and J alley on its south side. This will be a wonderful assistance in making Sacramento the conven-

tion city which her location and her importance so well fit her for.

The Union stage companies have also begun the erection of a depot at the southeast corner of 5th and I. It will be two stories. The stages will all drive in on the lower floor from the alley. This floor will be below the street level. The floor at the street level will be taken up by the stage company's offices and reception rooms. There will also be various stores, cafes and such to supply the demands of the transient public.

The proposed depot for the electric railways lies just across the street, and it is also supposed that the much spoken of and promised new depot of the Southern Pacific Railroad is to be located just to the north of the electric railway station. If these all develop as planned then all the depots, except for the steamboats, will be in an area not exceeding three city blocks. This will certainly be a wonderful convenience for the traveling public.

The plumber's supply house of Crane and Company is going to erect an elegant store and salesroom on the site of their present one at 4th and M Streets. This new structure was brought about by conditions in this city. In a published statement in the "Baltimore American," it is shown that twenty-three of the branches of the Crane Company show an increase in business for the past year. Sacramento heads the list; Oklahoma City, second; Indianapolis, third; Los Angeles, fourth; Davenport, Iowa, fifth; and Minneapolis, sixth. This, Mr. Crane says, is the best barometer of building and progress, as plumbing fixtures are practically as much the foundation of building as is the masonry. They are now building a new pipe warehouse at a cost of \$11,000. The new store building will be 81 x 150 feet, four stories.

This was Mr. Crane's first visit to Sacramento. He said he saw everywhere the evidence of a modern and progressive city and said he proposed to show his faith in the future of his business and the city by making a substantial investment. ●

There are many others, but this will suffice to show the healthy commercial condition of our section.

We are converting one of the city pump stations from a steam to an electrically equipped pumping outfit. It is

located at Front and U, and will be a 200-horsepower 440-volt 3-phase motor.

There is a movement on to light various sections of the country roads with electricity. A district has been formed in the Carmichael colony, on the north side of the American River about eight miles northeast of Sacramento. These things show how the country is advancing and how the movement of "Back to the Farm" will be encouraged by having a replica of the "Great White Way" along every country road.

We are now engaged in making estimates of the cost of construction of necessary gas services into north Sacramento. This will be a wonderful thing for the section north of the American River. It will also be quite a problem for our gas distribution department, for the mains will have to cross the American River and all the intervening ground between the river and the highlands. This same extension will open up a very desirable residence section on the 16th Street road, between the S. P. tracks and the river. This latter development has been retarded by the lack of a tunnel under the railroad at 16th Street. Regarding the north Sacramento gas extension a more detailed account will be given next month.

We were favored during the past month with a wonderful stockholders' meeting full of great thoughts and productive of great strength for "Pacific Service."

THE CAPTAIN.

San Joaquin Division

Spring Gap power house, located on the middle fork of the Stanislaus River some nineteen miles above Stanislaus power house, is now in operation. This plant is operated under a head of 1,864 feet, this being the highest head plant on the "Pacific Service" system. The plant has one generating unit of 7,500 kilowatts. Operators' cottages have been completed and the plant is strictly up to date in every respect.

A "Safety First" meeting was held in Modesto office on September 24th under the auspices of Mr. "Safety First" Hughes. About seventy-five employees were present. Mr. Hughes related instances of

carelessness and negligence which had resulted in accidents and urged upon all present to put forth every effort to keep the warehouses, substations, gas plants, power houses, and all other branches of "Pacific Service" in as safe and sane condition as possible. Numerous slides were shown and then followed a couple of reels of pictures of the Pit River development.

At the close of Mr. Hughes' remarks, Mr. Gill spoke a few words in regard to the educational plan which is to be put on by the Pacific Service Employees' Association this winter. Mr. Northcutt also outlined some of the events of the Pacific Coast Gas Association convention at Del Monte, from which he had just returned.

The following letter was received by Division Manager Northcutt a few days ago from the manager of the Strand Theater of Modesto, complimenting the company upon the excellent service rendered upon the occasion of a serious fire in the block in which the theater is located, several months ago:

Mr. Chas. S. Northcutt,
Manager Pacific Gas & Electric Company,
Modesto, Calif.

My dear Mr. Northcutt:

The public is constantly alert for an opportunity to criticize, but short on praise. I take this opportunity to step out of the cosmic state long enough to express my appreciation to you of the service rendered by you, your company, and your men on June 26th.

A fire occurred in the city block in Modesto in which the Strand Theater is located. I saw poles, wires and transformers burning, and electric service destroyed, and had visions of closed box office and resulting loss, but had not taken into consideration the true meaning of "Pacific Service." By the time theatergoers called upon us, "Pacific Service" had been restored.

Again, Charlie Northcutt, I compliment you and certainly wish you more power in your interpretation of "Pacific Service."

Very truly yours,

(Sgd) P. H. MARKOWITZ,
Resident Manager.

Moses E. Enochs, operator at Modesto substation, passed away on September 21st as the result of an operation. Mr. Enochs had been in the employ of the company only about six months, but in that short time his loyalty and unswerving attention to duty had won him many friends, and it is with real sadness that we write of his passing. The deceased leaves a widow and two daughters, and "Pacific Service" extends its fullest sympathy to these bereaved ones.

Four stockholders' meetings were held in San Joaquin division during the month of October. Meetings were held in Modesto, Stockton, Jackson and Sonora, and all were well attended.

M. L. R.

Fresno Divison

Fresno has at last settled back to normal after its annual county fair, which eclipsed this year all efforts in the past along this line. The following is from an article written by the publicity department of the Fresno Chamber of Commerce giving a graphic account of the doings:

"The event just closed, besides being recognized as 'the best fair yet,' will pay all its commitments promptly. These include over \$18,000 in premiums, \$5,900 in horse-racing purses, \$15,000 in automobile race prizes, \$35,000 for a new brick automotive building, and \$25,000 for free entertainments and the thousand and one items of administration expenditure. Altogether the week of the fair has cost well over \$100,000. All but one of these items are covered by the paid admissions and the renting of concession and exhibit space, while the new automotive building is an investment for the future. As a money-making proposition the big outlay would not be justified, but as an educational and publicity display of the productivity of Fresno County and the San Joaquin Valley, there is no doubt that the actual dividend accruing will constitute a handsome return on the investment.

"In fact, the time is coming when Fresno, owing to its geographical and strategical advantages, will be the pre-

eminent fair center of Central California, and possibly of the whole state. Each year the fair grows larger and its scope more ambitious, and within the next two or three years it will doubtless be housed in as handsome permanent buildings and exposition park as can be found anywhere in California."

The fig and raisin industries still continue at this end of the valley to be the centers of interest. The former has lately been adopted as a filler for a new brand of chocolate candy recently gotten out by an Eastern manufacturer. The popularity of this new confection has made possible and order for two carloads of dried figs. The raisin crop, we are glad to say, is safely off the trays and past any chance of injury by rain. The crop, though somewhat below normal this year, has brought a good price and the growers of the valley should reap a very substantial rate on their investment.

Fresno's business district is to be safeguarded in the future against fire loss by some sixty new fire hydrants which add to the completion of several miles of water mains recently installed in the downtown district. The hydrant is a local product and gives great credit to Fire Chief Berkholtz, who is, in a large measure, its designer.

Fresno's new City High School has at last opened its doors to the fall term. It may be of interest to the reader to know that the modern cafeteria located in the basement of the new school is to be completely equipped with gas-fired appliances for cooking; also, the new domestic science department has planned to install twenty small gas ranges for the use of the students, and, in special laboratory, six large gas ranges, among which are to be several large enamel ranges with oven regulators.

H. R.

Colgate Division

The fifth of September not only marked a national holiday, but also an epoch in the operation of the Colgate power house for on that day the Colgate tramway first performed the duties for which it was originally built.

There was heard no blare of trumpets, neither did the surrounding hills echo the roar of cannon; and, although no

roses were strewn in the path of the little four-wheeled car, the fifteen horsepower motor started to unreel the cable that let the little car, laden with mail, groceries and materials down the steep grade from the head of the pipe line to the power house below.

The original order authorizing the installation of this tramway was approved on September 25th, 1917. By February 11th, 1918, work was completed as far as the ditch, a matter of some 1100 feet. At this juncture the authorized amount was exhausted and, due to war conditions and the scarcity of labor, it was deemed advisable to defer completion to a more favorable time. On July 26, 1919, general manager's order No. 9232 was formally approved appropriating \$2,150 for the completion of the tramway to Colgate power house. By March, 1921, the last spike was driven and the car was let down the tramway to the power house, the total distance being 4100 feet.

At that time the barn had not been moved to the top of the tramway and it was not until September 5th that the horses could be left at the top and all mail, groceries and other supplies and materials be taken down by tram. Before that time it was necessary for a wagon to slowly descend the hill, a task that required about 45 minutes. The tram makes the trip in from ten to fifteen minutes.

One-half of the Yuba County Chamber of Commerce quarters on D Street has been turned over to the Women's Improvement Club of Marysville. The ladies officially took possession at a reception given in their honor recently. On behalf of the Chamber of Commerce Attorney Richard Belcher made the presentation address. Mrs. G. W. Harney accepted the quarters for the Improvement Club.

"Let There be Light," quoth the city fathers of Marysville, whereupon they passed an ordinance obliging property owners to remove all wooden awnings from their buildings in the business district. The last of these old relics which have graced Marysville business houses for years will be removed in a very little while.

Nearly 3000 Elks, representing every portion of the State, gathered in Shelton's Grove, Marysville, late in October for

the annual duck stew given by Marysville Lodge No. 783. The stew was given on Sunday and the previous Saturday evening witnessed one of the most successful dances ever given in the Marysville Elks Home.

Rivaling in brilliance any event that organization has ever staged in California, the Associated Oil Company employees of Marysville played hosts at a dancing party in October. The affair took place in a Yuba City hall and was attended by scores of Associated workers and their friends. At one end of the dance floor was located a supply of "Cycol," which was declared to have the property of rendering "more miles to the gallon."

Oroville was given the last word in the Oroville-Quincy controversy by the Railroad Commission recently before the matter was taken under advisement. The route which the road shall take led to a sharp controversy between Oroville and Plumas County.

President J. H. Young, of the Denver and Rio Grande railroad, who was a recent visitor in Oroville, expressed himself as delighted with that city and its prospects for a phenomenal growth during the next few years. Oroville is located on the route of the Western Pacific railway, which is controlled by the Denver and Rio Grande.

Practically all schools in Colgate Division were closed for the last week of October owing to the annual Teachers' Institute.

The Oroville auto park was recently closed for the autumn and winter. J. C. Roberts, keeper of the park, reports that 2,157 tourists made the park their headquarters while in Oroville during the past summer.

Colusa County recently joined with Glenn in an appeal to the Railroad Commission for additional train service. They asked the Commission to restore trains which had been removed by the Southern Pacific for lack of patronage.

Hundreds of middle westerners will be brought to California and settled on Yuba County land, according to H. V. Bell, manager of the Loma Rica Land

Colony, who has gone to St. Paul, Minneapolis, Sioux City, Des Moines, Omaha and other cities where he will advertise Yuba County extensively.

Duck, quail, deer and other wild game have fallen by the hundreds this year at the hands of clever sportsmen. Hunting of all game is said to be good this season and great success has attended all expeditions into the hills and tules. Bear have been hunted with success in the vicinity of Oroville.

F. B.

Drum Division

IT MIGHT INTEREST YOU TO KNOW:

- THAT the Empire Mine began operations some seventy-one years ago.
- THAT the top of the shaft is 2692 feet above the sea.
- THAT the bottom of the shaft is 150 feet below the sea.
- THAT the incline to the bottom is 5800 feet long.
- THAT there are over forty miles of workings opened up in the form of drifts, levels and raises.
- THAT over two million gallons of water have to be pumped out daily to keep the mine dry.
- THAT the mine employs some 425 men.
- THAT 28 mules spend their lives under ground.
- THAT the air-compressor plant has a capacity of 6000 cubic feet of air per minute at a working pressure of 90 pounds per square inch.
- THAT some 6000 steel drill bits are in service throughout the mine.
- THAT some thirteen tons of dynamite are required per month to break the ground.
- THAT every five feet of new ground opened is measured, sampled and assayed, thereby giving the value of the ore in place.
- THAT the quartz mined is crushed by eighty stamps weighing 1680 pounds each, to liberate the gold which is caught by quicksilver.
- THAT the concentrators separate and save the mineral or sulphurets, which are then treated by the cyanide process.

THAT the cyanide plant using a weak solution of soda cyanide, which has the property of dissolving gold and silver out of the ore, recovers the remainder of the valuable metals.

THAT the dissolved gold and silver is precipitated or collected by the use of extremely fine zinc dust or powder.

THAT over 45 per cent of the ore is crushed by the heavy stamps to three-thousandths of an inch.

THAT the coarser particles are only nineteen-thousandths in size.

THAT the natural gold found in the mine is 87 per cent pure and Uncle Sam's gold dollar is 90 per cent pure.

THAT 97 cents out of every dollar in the ore is recovered and three cents lost in the treatment.

THAT it costs a few dollars to operate the mine.

H. M. C.

Shasta Division

That the city of Redding is due to be a manufacturing center for Northern California is evidenced by the fact that the R. B. Swayne Company of Oakland has decided to erect a large creosoting plant to treat the butts of poles in this city. The plant will be capable of treating two carloads of poles per day and will have an initial installation of 20 h. p.

The Ellamore Candy Company of Marysville has also selected Redding as its wholesale and retail distribution center for the northern section of the State and will manufacture candies and ice cream. They will require about 40 h. p. from "Pacific Service."

Hat Creek No. 2 plant paralleled the system on September 28th, and is now generating 6000 h. p. for use around the bay. This completes the installation on Hat Creek where "Pacific Service" now has two of the most up-to-date power plants in the State, capable of grinding out 20,000 h. p. from the waters of Hat Creek.

The new railroad from Bartle to Pit River is running trains regularly and delivering great stocks of supplies at Pit No. 1, the next of our great power developments.

C. M. C.

San Jose Division

Here is a tribute to "Pacific Service" as it is rendered in the Santa Clara Valley:

Los Gatos Chamber of Commerce,
Los Gatos, California.

September 19, 1921.

Mr. J. D. Kuster,
San Jose,
California.

Dear Sir:

At a meeting of the Los Gatos Chamber of Commerce the following resolution was unanimously adopted:

RESOLVED:

The Los Gatos Chamber of Commerce wishes to express its appreciation for the important improvement the Pacific Gas & Electric Company is making to the Los Gatos gas system.

Through the personal efforts and interest of Mr. John D. Kuster, District Manager at San Jose, his company is laying a high pressure pipe line from San Jose at a cost of \$125,000.

This would indicate that our population has grown to warrant so large an investment and that Mr. Kuster has confidence in the future of Los Gatos.

Yours very truly,

LOS GATOS CHAMBER OF COMMERCE.

W. G. LIDLEY,
President.



San Francisco Division

One of the latest converts to gas is the Sims Packing Company.

At the corner of 20th and Folsom Streets, San Francisco, is an enterprise that is different from any other of its kind in the world. This packing company is engaged in the making and canning of ready-to-serve table desserts with a slogan of "just open and serve."

Many delicious flavors, including apricot, chocolate, pineapple and butter-scotch, are utilized in their processes, and from the time the fresh fruit enters the receiving department until the canned dessert leaves the shipping department it is interesting to study how a packing company performs all of the necessary work in connection with this business.

It is housed in a new brick structure 200 x 80 feet. The machinery which operates in connection with the cooking and canning of the dessert is of special

equipment and designed after many months of study and experimenting by expert engineers who eliminated and minimized hand labor as much as possible.

The present plant capacity is 750 cases per day, four dozen cans to the case, containing 9 ounces net weight of food stuff. This plant is operated so automatically that it is possible to operate with only 40 employees.

F. T.

GAS GENERATING DEPARTMENT

Saturday, October 22nd, the plants in San Francisco sent out a total of 19,800,000 cubic feet, a really big day for this time of the year. More power to the house heating division of the New Business Department.

The 350,000 duplex compressor for the city high pressure lines is on the way out from the East. Let everyone hope that it will arrive safely in spite of the threatened railroad strike. Potrero station needs it and is ready for it.

The Thomas gas meters, "Electrically operated," are now in service at Potrero and Metropolitan. These meters are the last word in large measuring devices for gas, and are operating very well indeed.

Generators, boilers, purifiers and auxiliary apparatus are all ready for winter. When the new compressor arrives the generation department is ready for any winter load that may come.

J. M. DICKEY.

The bookkeeping department has lost two popular members by the resignation route during the month just past in the persons of Miss Vivian Gough and Miss Marie Rike. Miss Gough, who for the past two years has given efficient service as the nominal head of the stub crew, has fallen a victim to Cupid. Miss Rike sails for Honolulu in the near future after almost a year's service on the books.

An event of much interest and excitement will be the forthcoming tennis match between Harry Smith and Scott Stewart. Both men are training faithfully. Smith has been greatly aided in his preliminary work by the use of J. Deacon Howe's racquet.

J. M. Handy, an efficient and well liked member of the bookkeeping force, was transferred on October 10th to the East Bay Division.

IN MEMORIAM - J. M. FULWEILER

John Mathias Fulweiler, our company's legal representative in Auburn, Placer County, died at his home October 23rd last, aged 88 years.

Judge Fulweiler, as he was familiarly known, was a spectacular figure in the life of Placer County for more than an average lifetime. He was a native of Ohio, born in that State October 17th, 1833. In the year 1852 he and his father, Rev. Abraham Fulweiler, came across the plains in an ox team to California.

Upon arrival here the family at once became interested in ranching and stock raising. Such a life, however, did not appeal to Mr. Fulweiler for any great length of time, and it was not long before

he and three other young men out-fitted pack animals for a placer mining expedition to the remote sections of Shasta County. He met with more or less success, remaining there for the next few years. Later he became identified with the mining industry in Nevada and Placer County. When the Central Pacific Railroad began the construction of its transcontinental line through the eastern end of Placer County the judge opened a butcher business at Dutch Flat.

During this time he read law and qualified himself to be admitted in the year 1871 to the 14th District Court, which comprised the Counties of Nevada and Placer. In 1871 his political party elected him District Attorney, re-electing him again in 1873. The term of office at that time was two years instead of four, as now.

Mr. Fulweiler moved to Auburn in March, 1872. His legal connection with the water companies of this section soon followed, and he became the legal representative of the old South Yuba water system, and a part of "Pacific Service." By reason of this service the judge was the proud possessor of a service pin indicating forty years' service.

With his death there passed one of the few remaining members of the old guard of the California bar.

The judge was industrious, an indefatigable worker, plucky and universally honored and respected for his honesty, integrity and unflinching loyalty to his clients. He probably kept in active practice to a more advanced age than any other attorney in the State. He maintained his office in one single spot for more than 45 years.

Mr. Fulweiler was contemporaneous with a great number of men who were celebrated in California annals, such as Chief Justice Searls, Supreme Justice A. C. Niles, Attorney General Thomas Williams, A. A. Sargent, A. B. Dibble, all in Nevada County; General Joe Hamilton, Judge J. E. Hale, C. A. Tuttle, Sr., and E. L. Craig of Placer. In Auburn he practiced before Judges Readon, Ben Myers and J. E. Prewett, the latter for the past 31 years.

The judge was admitted to the order of Masonry in 1874, since which time he has been closely affiliated with all its branches, the burial service being conducted by the Knights Templar of Auburn.

The Fulweiler residence in Auburn was for a number of years considered the best in Placer County.

He is survived by his wife and one brother.

We shall miss the judge, for whom we have always had the highest respect.

H. M. C.



California Utility Securities

Conservative minded investors who regard safety and stable market value as the prime requisites of a good investment, should favorably consider the securities of California public utility companies.

Dealing in absolute necessities for which there is no substitute, these companies are further assured stable earning power by reason of State supervision.

Present attractive investment opportunities are briefly described in our folder "Investment Opportunities of Today" sent without obligation upon request.

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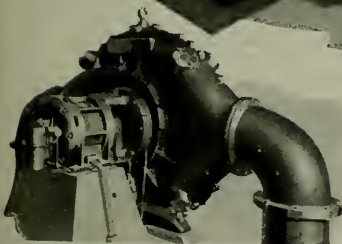
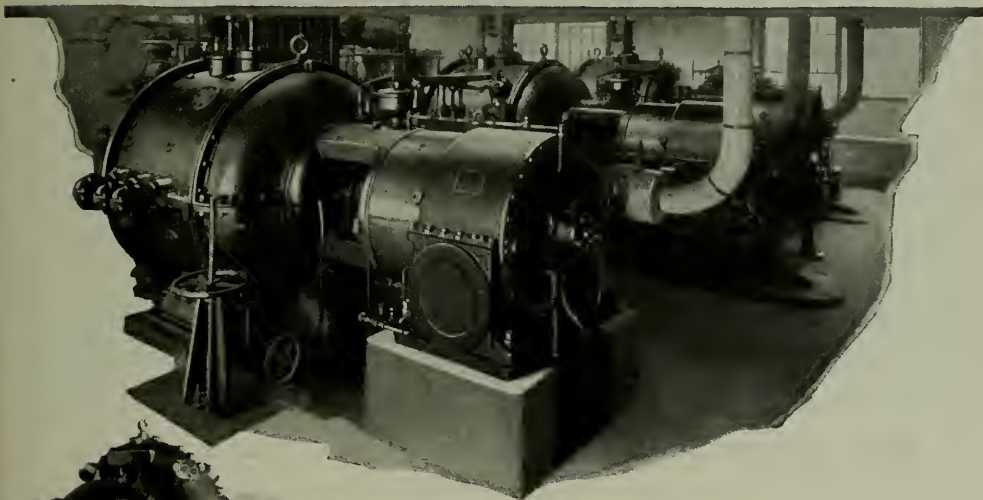
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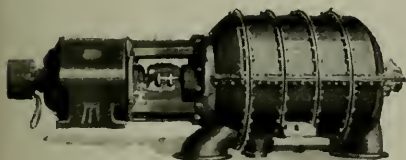
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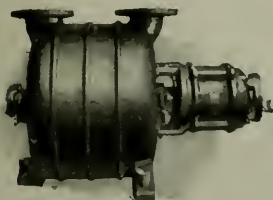
Remarkable advances have been made in the operating economies of recently improved gas plants



G-E motor-driven centrifugal gas exhauster installed in coal gas plant (manufacturing equipment)



G-E direct-connected motor-driven gas booster (distributing equipment)



G-E direct-connected motor-driven air compressor for gas burning furnaces (consumption equipment)

G-E Centrifugal Compressors better gas service

The initial installation of two of the G-E Centrifugal Gas Exhausters shown in the above illustration gave gratifying records with respect to low cost of maintenance, small oil consumption, high efficiency, and above all, accurate control of gas pressure at the ovens. As a result of this record, repeat orders have been received for a third gas exhauster and two gas boosters for this by-product coke plant.

Owing to the service which a gas company has to give, gas engineers have been very conservative about making changes and installing new types of machinery. But since G-E Centrifugal Compressors have such successful operating records in leading gas plants, they are now readily adopted for use in the manufacture, distribution and consumption of gas.

Further details are given in bulletin No. 48600—ask the nearest G-E office for it.

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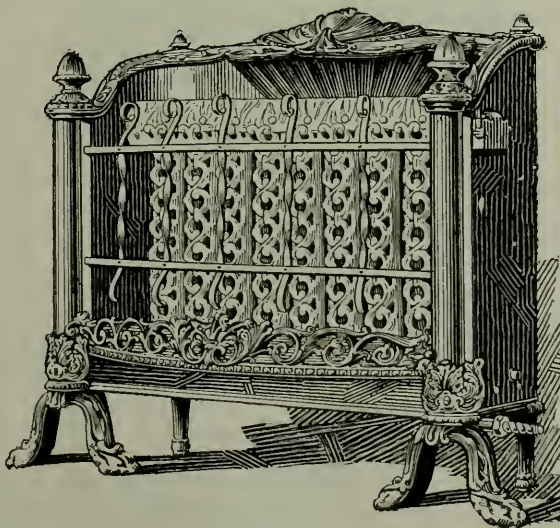
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WELSBACH Gas Heater Is Self-Lighting

No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

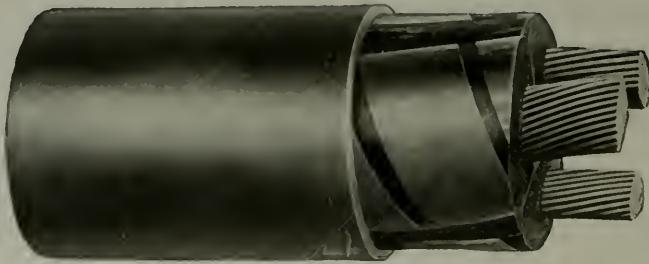
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The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



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New STANDARD Type H. Cable, 25,000 Volts
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Meet every reasonable requirement as regards quality, price and delivery.

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Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

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PITTSBURGH, PA.

336 BK Nickel Trimmed with Warming Oven



A Combination Gas Range

THAT PERMITS OF EVERY
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IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

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PELTON

Impulse and Reaction Turbines

Range in size from $\frac{1}{4}$ HP upwards and for any head down to 20 ft. The illustration herewith is of the Blue Earth Development, Consumers Power Co. Minnesota, containing two Pelton Duplex Reaction Turbines operating under a head of 57 feet.

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RIVETED STEEL PIPE, STAND PIPES, PENSTOCKS OR ANY SPECIAL
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ELEVATED STEEL TANKS—OIL OR PRESSURE TANKS

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STEEL WIRE FENCE WITH SELF-ANCHORING STEEL POST

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Create Economy All Along the Line

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“B” Tin

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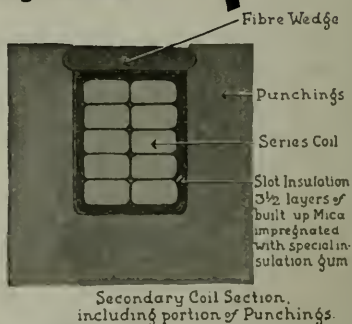
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CITIES AND TOWNS SERVED BY COMPANY

	DIRECTLY		INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity.....	171	1,120,503	60	153,449	231	1,273,952
Gas.....	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic).....	18	61,719	8	15,488	26	77,207
Railway.....	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
¹ Alameda.....	28,806	¹ El Verano.....	400	¹ Meridian.....	200	¹ San Leandro.....	5,703
¹ Albany.....	2,462	¹ Emeryville.....	2,390	¹ Millbrae.....	300	¹ San Lorenzo.....	500
¹ Alvarado.....	1,000	¹ Escalon.....	900	¹ Napa.....	400	¹ San Martin.....	250
¹ Alviso.....	517	¹ Esparto.....	200	¹ Hill Valley.....	2,554	¹ San Mateo.....	5,979
¹ Amador City.....	377	¹ Fairfax.....	250	¹ Milpitas.....	300	¹ San Pablo.....	500
¹ Anderson.....	750	¹ Fairfield.....	1,008	¹ Mission San Jose.....	500	¹ San Quentin.....	3,000
¹ Angel Island.....	500	¹ Fair Oaks.....	300	¹ Modesto.....	9,241	¹ San Rafael.....	5,512
¹ Antioch.....	1,936	¹ Fall River Mills.....	300	¹ Modesto.....	9,241	¹ Santa Clara.....	5,220
¹ Aptos.....	300	¹ Farmington.....	300	¹ Mokelumne Hill.....	900	¹ Santa Cruz.....	10,917
¹ Arbuckle.....	500	¹ Felton.....	300	¹ Monterey.....	5,479	¹ Santa Rosa.....	8,758
¹ Atherton.....	500	¹ Folsom.....	2,000	¹ Morgan Hill.....	646	¹ Saratoga.....	500
¹ Auburn.....	2,289	¹ Forestville.....	250	¹ Mountain View.....	1,888	¹ Sausalito.....	2,790
¹ Barber.....	500	¹ Fresno.....	45,086	¹ Mt. Eden.....	200	¹ Sebastopol.....	1,493
¹ Belmont.....	375	¹ Gilroy.....	2,862	¹ Napa.....	6,757	¹ Shasta.....	200
¹ Belvedere.....	616	¹ Glen Ellen.....	1,000	¹ Nevada City.....	1,782	¹ Shellyville.....	200
¹ Benicia.....	2,693	¹ Gonzales.....	500	¹ Newark.....	500	¹ Sheridan.....	250
¹ Ben Lomond.....	400	¹ Grass Valley.....	4,006	¹ Newcastle.....	750	¹ Smartsville.....	300
¹ Berkeley.....	56,036	¹ Gridley.....	1,636	¹ Newman.....	1,251	¹ Soledad.....	400
¹ Biggs.....	683	¹ Grimes.....	500	¹ Niles.....	1,000	¹ Soquel.....	400
¹ Bollinas.....	200	¹ Groveland.....	500	¹ Novato.....	400	¹ Sonoma.....	801
¹ Brentwood.....	400	¹ Guerneville.....	800	¹ Oakdale.....	1,745	¹ Sonoma.....	1,684
¹ Broderick.....	700	¹ Hamilton City.....	250	¹ Oakland.....	216,261	¹ South San Francisco.....	4,411
¹ Burlingame.....	4,107	¹ Hammonont.....	500	¹ Oakley.....	200	¹ Standard.....	500
¹ Byron.....	350	¹ Hayward.....	3,487	¹ Occidental.....	600	¹ Stanford University.....	2,700
¹ Campbell.....	600	¹ Hercules.....	373	¹ Orland.....	1,582	¹ Stockton.....	40,296
¹ Capitola.....	300	¹ Hillsborough.....	931	¹ Oroville.....	3,340	¹ Suisun.....	769
¹ Carmel.....	638	¹ Hollister.....	2,781	¹ Pacifica.....	300	¹ Sunol.....	350
¹ Cement.....	1,000	¹ Honcut.....	500	¹ Pacific Grove.....	2,974	¹ Sunnyvale.....	1,675
¹ Centerville.....	1,000	¹ Hughson.....	250	¹ Palo Alto.....	5,900	¹ Sutter City.....	250
¹ Ceres.....	637	¹ Ione.....	1,000	¹ Paradise.....	500	¹ Sutter Creek.....	920
¹ Chico.....	9,339	¹ Irvington.....	1,001	¹ Patterson.....	694	¹ Tehama City.....	196
¹ Colfax.....	573	¹ Jackson.....	1,601	¹ Penn Grove.....	200	¹ Tiburon.....	400
¹ College City.....	250	¹ Jamestown.....	750	¹ Perry.....	250	¹ Tracy.....	2,450
¹ Collinsville.....	200	¹ Kennett.....	464	¹ Perkins.....	300	¹ Tres Pinos.....	300
¹ Colma.....	1,500	¹ Kentfield.....	500	¹ Petaluma.....	6,226	¹ Tuolumne.....	1,500
¹ Columbia.....	200	¹ Kenwood.....	300	¹ Piedmont.....	4,282	¹ Turlock.....	3,394
¹ Colusa.....	1,846	¹ Keswick.....	200	¹ Pike City.....	200	¹ Vacaville.....	1,254
¹ Concord.....	912	¹ King City.....	1,048	¹ Pleasanton.....	991	¹ Valejo.....	21,107
¹ Cordelia.....	300	¹ Knights Ferry.....	200	¹ Pittsburg.....	4,715	¹ Vina.....	300
¹ Corning.....	1,449	¹ Knights Land- ing.....	400	¹ Pleasanton.....	991	¹ Vineburg.....	200
¹ Corte Madera.....	607	¹ La Grange.....	200	¹ Port Costa.....	900	¹ Walnut Creek.....	538
¹ Cotati.....	200	¹ La Grange.....	200	¹ Princeton.....	300	¹ Warm Springs.....	200
¹ Cottonwood.....	500	¹ Larkspur.....	612	¹ Red Bluff.....	3,104	¹ Waterford.....	250
¹ Coyote.....	200	¹ Lathrop.....	600	¹ Redding.....	2,962	¹ Watsonville.....	5,013
¹ Crockett.....	1,500	¹ Lewiston.....	200	¹ Redwood City.....	4,020	¹ Wheatland.....	435
¹ Crow's Landing.....	300	¹ Lincoln.....	1,325	¹ Richmond.....	16,843	¹ Williams.....	650
¹ Daly City.....	3,779	¹ Live Stock.....	300	¹ Rio Vista.....	1,104	¹ Willows.....	2,190
¹ Danville.....	400	¹ Livermore.....	1,916	¹ Ripon.....	500	¹ Winters.....	903
¹ Davenport.....	300	¹ Lomita Park.....	600	¹ Riverbank.....	200	¹ Woodland.....	4,147
¹ Davis.....	939	¹ Loomis.....	300	¹ Rocklin.....	643	¹ Woodside.....	300
¹ Decoto.....	300	¹ Los Altos.....	500	¹ Rodeo.....	300	¹ Yolo.....	350
¹ Del Monte.....	300	¹ Los Gatos.....	2,317	¹ Roseville.....	4,477	¹ Yuba City.....	1,708
¹ Denair.....	200	¹ Los Molinos.....	200	¹ Ross.....	727	Total Cities and Towns.....	1,347,844
¹ Dixon.....	926	¹ Madison.....	300	¹ Sacramento.....	65,908	Add Suburban Population.....	368,115
¹ Drytown.....	200	¹ Marina.....	1,286	¹ Salinas.....	4,308	Total Population Served.....	1,715,959
¹ Duncan's Mills.....	200	¹ Mare Island.....	600	¹ San Andreas.....	1,183		
¹ Durham.....	250	¹ Martinez.....	3,858	¹ San Anselmo.....	2,475		
¹ Dutch Flat.....	750	¹ Marysville.....	5,461	¹ San Bruno.....	1,562		
¹ Eldridge.....	500	¹ Maxwell.....	500	¹ San Francisco.....	506,676		
¹ El Cerrito.....	1,505	¹ Mayfield.....	1,127	¹ San Jose.....	39,642		
¹ Elmira.....	350	¹ Menlo Park.....	900	¹ San Juan.....	350		

Unmarked—Electricity only.

¹Gas only.²Gas and Electricity.¹Gas, Electricity and Water.²Gas, Elect. and St. Railways.³Electricity and Water.⁴Electricity supplied through other companies.⁵Gas supplied through other companies.⁶Water supplied through other companies.**"MORE POWER TO MEET THE DEMAND"**

The Pacific Gas and Electric Company put into operation this year three new hydro-electric plants having an aggregate capacity of 43,560 horsepower. Two of these plants, which are the first of the big Pit River project to be completed, are located on Hat Creek. The other plant is located on the Stanislaus River, Tuolumne County.

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PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



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NOVEMBER 1921

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6

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San Jose

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Red Bluff

Pacific Service Magazine

Volume XIII



Number 6

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Views of Hat Creek No. 1 power development. The two upper pictures show headworks, forebay and canal; the center view is of the power house, with penstock line at right and left; at lower left is seen a section of the turbine in the power house; at lower right the flume leading to Hat Creek No. 2.

Development Progress in the Pit River Region Shows Remarkable Record

By FREDERICK S. MYRTLE

Both Hat Creek plants in operation, each feeding its quota into our "Pacific Service" distributing system.

Hat Creek No. 1 was put in operation August 22nd of the present year, and Hat Creek No. 2 followed its example on the 28th of September.

Pit River No. 1 development in active process of construction, with the excavation for the diversion dam on Fall River half completed, the 1200-foot canal from intake to tunnel mouth 85 per cent dug, the 10,180-foot tunnel that will carry the water from Fall River Valley to the canyon of the Pit 86 per cent driven.

The foundation for Pit No. 1 power house poured and the 1200-foot tail-race from power house to the river 75 per cent excavated.

The pole-line from Hat Creek to Cottonwood, distance about 60 miles, completed and already bearing the precious "juice" from our Hat Creek plants. Forty miles of the double-circuit steel-tower transmission line from Cottonwood to Vaca substation completed and the tower foundations laid for the balance of the distance.

So stands the record of our Pit River



A close-up of Hat Creek No. 1 power house.

development at the time of writing.

It is the approach to Thanksgiving and this record, made in less than a year and a half—for preliminary work in the Pit River region started June last year—should fill our hearts with the right kind of spirit for the occasion.

Just a year ago I contributed to an article to PACIFIC SERVICE MAGAZINE, entitled "The Pit River Region a Veritable



Diversion dam at Cassel. Hat Creek No. 1.



Flume at Hat Creek No. 2 development.

Water-power Wonderland." In this I outlined our Company's great development project from its beginnings and told of the enormous advantages for water-power purposes of that wide range of foothill and valley that has Mt. Shasta for one extremity and Mt. Lassen for the other, of the peculiar lava formation of the soil through which nature provides a perfect underground storage system, so that the rivers that seem to spring out of the ground at will, have such an even stream-flow throughout the year that it is a common sight to see substantial bridges only a couple of feet or so above the surface of the water.

This year I visited the Pit River region again and with a party of guests, under the guidance of our construction engineer, Mr. Peterson, stood at the brink of apparently stagnant pools; it was difficult for the uninitiated to believe that here were the life-giving sources of broad-bosomed streams that an incredibly short distance away were pouring volumes of water ranging from 600 to 2500 cubic feet per second westward to the Sacramento.

In a word, our Pit River region has "made good" in every sense

of the word. It is living up to its reputation. When this great development of ours shall have been completed and our already comprehensive electric generating and distributing system increased by some 575,000 horsepower, power-users the length and breadth of our "Pacific Service" territory may laugh at dry seasons. Development of the Pit River will end the water shortage scare for all time in our section of California.

Hat Creek Nos. 1 and 2 are model plants in every sense of the word. They are entirely of modern construction. The following engineering details may be of interest at present:



Power house at Hat Creek No. 2 development. Pit River Canyon in the distance.

Hat Creek, as most of our readers are aware, is a tributary of the Pit. Its head-waters are at the base of Mt. Lassen from which the stream flows in a northerly direction and empties into the Pit River near Carbon, a place about five miles below the Pit River Falls and seven miles from the town of Fall River Mills. The main sources of water for Hat Creek are Rising River Lake, near Cassel, and Great Spring, on Upper Hat Creek. The minimum water flow of Hat Creek above Cassel is about 310 cubic feet per second and the maximum about 600. The mean average flow, based on four years' records, of a fraction over 400 cubic feet per second is available for Hat Creek power house No. 1.

The water from Hat Creek is diverted at the town of Cassel by a timber and rockfill crib dam, held in place by a concrete structure on the east side of the creek and by the headworks structure on the west side. This raises the water level 2.5 feet, and this level will be ultimately raised 2.5 feet more when storage is wanted at the power house for peak loads.

The concrete headworks are furnished with two motor-operated radial gates which serve to control the water at the intake. The dimensions of these gates



At the tunnel mouth, Pit No. 1 development.

are 8 x 11 feet. Above the headworks an earth embankment of 4553 cubic yards was built to prevent flooding of private property.

The conduit from the headworks to the forebay consists of an open canal



Excavating foundation for the power house at Pit No. 1 development.



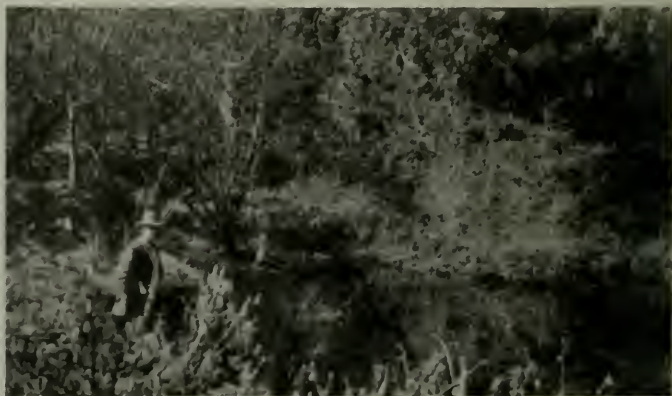
Construction camp at Pit No. 1 development.

2750 feet long and 17 feet wide at the bottom. To build this required the excavation of 25,553 cubic yards of earth and rock. In order to make the canal large enough to carry the maximum flow of 600 cubic feet per second an earth embankment of 3177 cubic yards was made on the berms. The excavation was made by steam shovel. The earth embankment was done by hand with teams and scrapers. About 1512 cubic yards of rock wall lining were placed along the walls of the canal, where necessary, and part of this was faced with cement and mortar.

A forebay of $12\frac{1}{2}$ acre-feet capacity at the head of the penstock serves to regulate the flow of water. The walls of the forebay were built by first excavating a core trench into the rock and then making an earth embankment. The earth was harrowed, rolled and wetted as it was placed. A total of 1161 cubic yards of rip-rap and 100 cubic yards of wet wall were placed in the forebay. A concrete outlet structure with two motor-operated structural steel radial gates controls the delivery of water to the penstock. These gates

and motors are the same as those installed at the headworks save for their dimensions, which are 8x14 feet, and there are 320 cubic yards of concrete in the outlet structure. Water was turned into the forebay on July 16th last.

The penstock consists of a single pipe, riveted steel, 1605 feet, 8 inches in length and varying from 10 feet in diameter at the forebay to 8 feet in diameter at the power house. The penstock was furnished by the Western Pipe and Steel Company, and the last shipment left the factory on March 17th. Shipments were made to Bartle, the terminus of the McCloud railroad at that time. The pipe was shipped in 57 sections. Some of these sections were hauled part way on sleds during last winter and the remainder of the way on trucks in the spring. Some startling details are told of transportation difficulties during the snow period. Each section of pipe took a 12-horse team to haul and at the least halt on the way the sled runners would freeze to the snow so that they would have to be jacked up before resuming the journey. The installation of the penstock was completed July 19th. The total excavation for the penstock was 2345 cubic yards of earth and rock. The head here is 216.8 feet.



Engineer Peterson at one of the sources of Fall River, near Dana.

The power house is a reinforced concrete structure with steel frame. It is 43 feet wide by 56 feet 6 inches long and 48 feet 2 inches high. The structure required the excavating of 2904 cubic yards of earth. The concrete walls are painted light buff and the ceiling a cream color. The interior woodwork is a light buff shade. The generating equipment consists of a 12,500 K. V. A. General Electric alternating current generator, driven by a 15,000 horsepower vertical hydraulic turbine furnished by the Wellman-Seaver-Morgan Company. The turbine was shipped to Bartle in the fall of 1920 and some of the parts were started to the job on sleds over the snow. These, however, had to be left along the way until the roads dried up in May; they were then hauled the remainder of the way by a Holt caterpillar. The generator was up to full voltage July 29th and was cut in on the line in the afternoon of August 22nd with an initial load of 3900 kilowatts.

After passing through Power House No. 1 the water from Hat Creek is reinforced by Rock Creek and Crystal Lake, whose contributions bring the mean flow up to 600 cubic feet per second. Hat Creek No. 2 power house is situated about two miles down stream from Hat Creek No. 1, at the end of a narrow canyon and marking the point where the stream leaves its course down valley and turns

northward to join the Pit a short distance away. The water for this development is diverted in the canyon approximately one mile above the power house by a combination crib and sheet piling dam 456 feet long and raising the water level some 6.5 feet above the original water surface. The headworks are of the same type and material as those of Hat Creek No. 1, both being furnished by the Joshua Hendy Machine Works. From the dam there is a timber flume 4469 feet long, 8 feet 2½ inches deep and of 16 feet 3½ inches inside bottom width, with a maximum capacity of 800 cubic feet per second. This is really a wonderful structure. Before the water was turned in there was room for two automobiles abreast to travel the length of the flume. The flume boxes are placed on 833 mudsills, 296 cedar and 537 concrete. The boxes are 16 feet long. Connecting this flume with the headerbox is a concrete transition section 225 feet long, the concrete heavily reinforced with ½-inch corrugated bars. The water spills over both sides of the transition section and runs down through the spillway chute to Hat Creek below. This spillway contains 730 cubic yards and is heavily reinforced.

The delivery of water to the penstock is controlled by two gates of the same type as those installed at Hat Creek No. 1. The penstock consists of a single pipe, riveted steel, 413 feet long and varying in diameter from 10 feet at the headerbox, to 8 feet at the power house. This penstock, like the other, was furnished by the Western Pipe and Steel Company. Installation of the penstock was completed August 25th. There were 1105 cubic yards of ex-



Falls of the creek above Burney Falls.

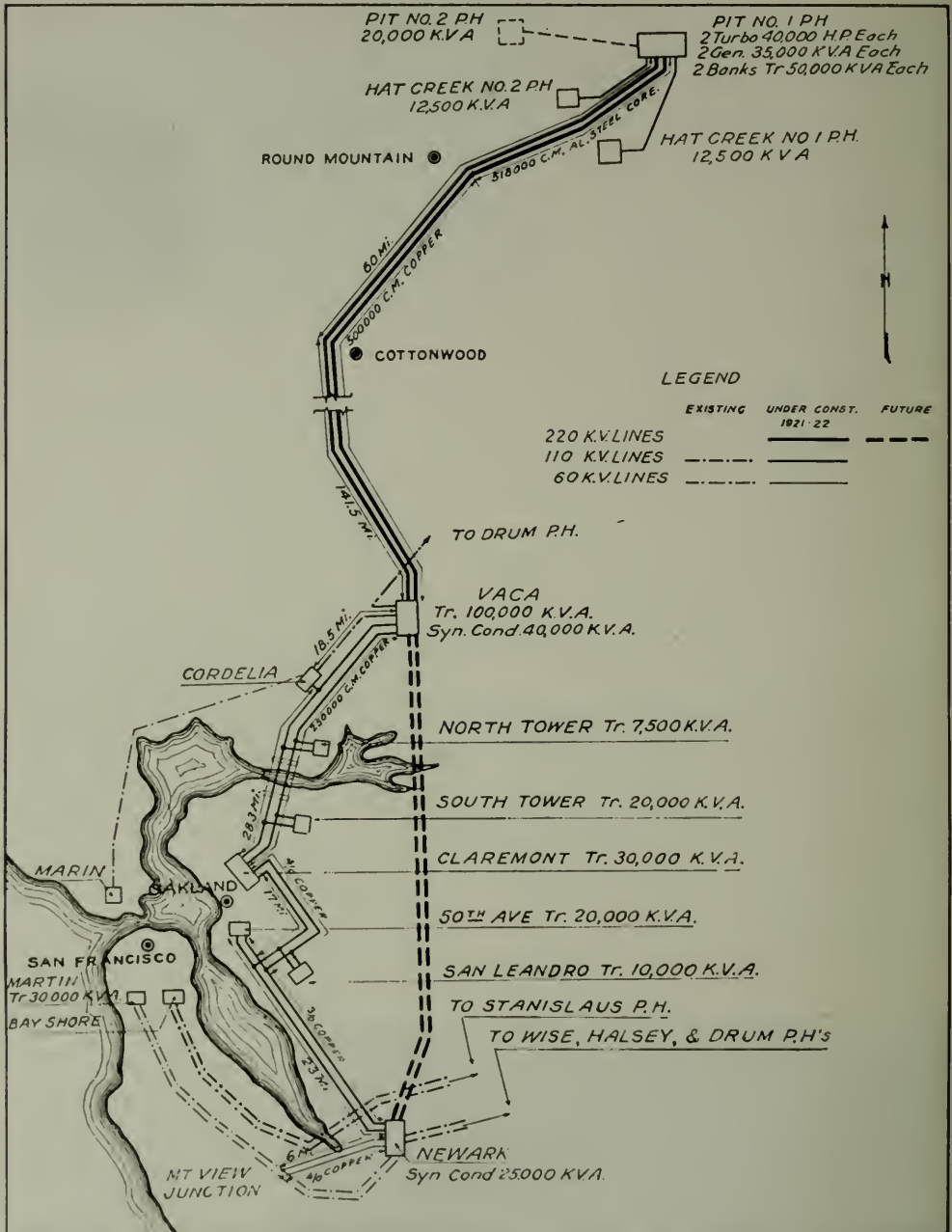


Chart of Pit River and Vaca-Oakland-Newark transmission systems, included in the "Pacific Service" hydro-electric's construction program for 1921-22.

cavation for the penstock line. The maximum available head is 197.9 feet. The gross head is 201.3 feet.

The power house is a reinforced concrete structure with structural steel

frame. It is 43 feet wide, 56 feet 6 inches long and 48 feet 2 inches high. A total of 2384 cubic yards of earth and rock was excavated for this structure. The material, decoration and general con-

struction and equipment of No. 2 power house are the same as at Hat Creek No. 1, even to the turbine and generator.

There are four transformers, a bank of three and one spare, installed at Hat Creek No. 2. They are 8000 K. V. A. outdoor, water-cooled, high voltage 63500/110000 "Y," low voltage 6600, and were furnished by the General Electric Company.

On the first of November I visited these developments in company with a prominent journalist, who had had experience of hydro-electric projects. He remarked: "Less than a mile for one development and just a mile for the other, and no storage needed for either." He spoke volumes.

Pit River No. 1 development, while of much greater importance than those on Hat Creek from the standpoint of volume of electric energy to be generated and distributed, is also, much more spectacular from the unusual physical conditions involved. The water for this is diverted from Fall River about a mile above the town of Fall River Mills. Fall River like the others in this section is a tributary of the Pit and derives its main source of supply from the Modoc lava beds north of Fall River Valley, while other sources are to be found in springs at the northwestern end of the valley not 15 miles from the town referred to. Within reach of a postal station named Dana one may stand by a large, circular pool, apparently of crater formation, and watch the springs bubble to the surface. This one pool alone furnishes 50 cubic feet per second to the flow of the river a very short distance away. Fall River itself accumulates an average flow of about 1500 cubic feet per second before it reaches the point of diversion for Pit River No. 1 development. At the point of diversion a dam 600 feet long is in process of construction, also headworks of reinforced concrete structure similar to those at the Hat Creek plants. From this point a conduit consisting of

an open cut canal 1200 feet long, its bottom width varying from 50 feet at the headworks to 22 feet at the tunnel portal, will convey the water to a 10,111-foot tunnel through the hillside separating Fall River Valley from Pit River Canyon and providing a drop of 454 feet to the power house at the river's edge.

As before stated, the canal at the time of writing is 85 per cent excavated and the tunnel is being driven so fast that the opposing crews are expected to meet before the end of the present year. This tunnel is a remarkable piece of construction work for which F. Rolandi, a San Francisco contractor, is responsible. It is 13½ feet high, 11 feet wide at the bottom and has a maximum capacity of 1800 cubic feet per second. The grade is 3 feet in the 1000. It is to be lined entirely with concrete. Working crews are conveyed from either portal on a little railway of which the cars are driven by a storage battery motor engine. At the Pit River end, in place of a forebay there is being constructed a surge-chamber 60 feet in height and 60 feet inside diameter. In an emergency the water can spill over the top of this and be carried away in a separate channel to the river. From this surge-chamber two penstocks, each 1372 feet long, consisting of 331 feet of riveted steel and 1041 feet of lap welded pipe, will convey the water to the power house 454 feet below. The penstocks will be 10 feet 9 inches in diameter at the upper end and 8 feet at the lower.

The power house is being erected on level ground within reach of the river. It will be a handsome structure of structural steel frame encased in reinforced concrete 90 feet high, with spiral towers of Gothic design. The generating equipment will consist of two vertical turbine units direct-connected to two 35,000 K. V. A. 11,000-volt electric generators, the whole furnished by the Allis Chalmers Company of Milwaukee. From which it will be seen that the installed

capacity of Pit River No. 1 will be, in round numbers, 93,000 horsepower. The foundation of this power house has been poured at the time of writing and, as before stated, 75 per cent of the excavating work has been done upon the tail-race running from the power house to the river, a distance of, approximately, 1200 feet.

I should mention that in the equipment of this power station will be two sets of three transformers each, which will "step" the electric energy generated at 11,000 volts up to 110,000 or 220,000, at will, and there will be one spare transformer, making seven in all.

Concerning the transmission line, the record of which up to date is given above, it may be said here that the wire carrying the electric energy through the mountains will be made of aluminum while for the balance of the journey there will be copper cables. The line from Cottonwood to Vaca substation, near Vacaville, a description of whose construction features was contained in a recent issue of *PACIFIC SERVICE MAGAZINE*, will be carried on twin circuit steel towers furnished by the Pacific Coast Steel Company, the reinforcing for the concrete tower footings being furnished by the Columbia Steel Company.

In due course the transmission lines will be extended from Vaca substation to Newark substation. This will involve reconstruction of the Cordelia-Oakland lines. This Pit River development work will also require improvements and additions to be made to the equipment at Cordelia, Claremont, Newark, San Leandro and Martin substations, as, also, the north and south towers on either side of Carquinez straits.

Last, but not least, the Pit River railroad. It has been already noted that our company, in order to facilitate transportation, has constructed 35 miles of road extending from the McCloud river railroad terminus at Bartle to the construc-

tion camp at Pit No. 1, a distance of 35 miles. I had the pleasure of going out by this road upon my recent trip. It is excellently laid and takes its way up a steady grade through the timber forests. There is a capable locomotive engine always on the job to draw trucks, while passenger service is being carried on by a Ford speedster. It is quite an exhilarating experience and well worth the taking. The line runs by the river bank, past the proposed site for Pit River No. 2 development and on till in the vicinity of Peck's bridge the river turns one way and the railroad another. As the remaining power projects of Pit River series are being constructed it is the Company's intention to extend the railroad down the river, until at the Big Bend, the last and largest of all the project developments brings this immense project to what we expect to be a most successful completion.

There is a wonderful construction camp upon the level ground adjoining the power house site which is approached by a bridge which our Company built across the river from the highway skirting the canyon. Here Superintendent Jim Martin has accommodations for several hundred men. Incidentally, there are between 600 and 700 men engaged on the Pit River work, not counting the men employed on the tunnel which, as before stated, is a contract job. This construction camp will be unlike those at Hat Creek plants in that it will not disappear from the surface of things upon completion of the development. In other words, as our readers have already been made aware, there is in process of construction a community center, consisting of a commodious club house for employees, operators' cottages and guest houses, barns, etc., which will remain a permanent feature of our "Pacific Service" physical properties after the construction gangs with their temporary dwellings have moved down stream and away.

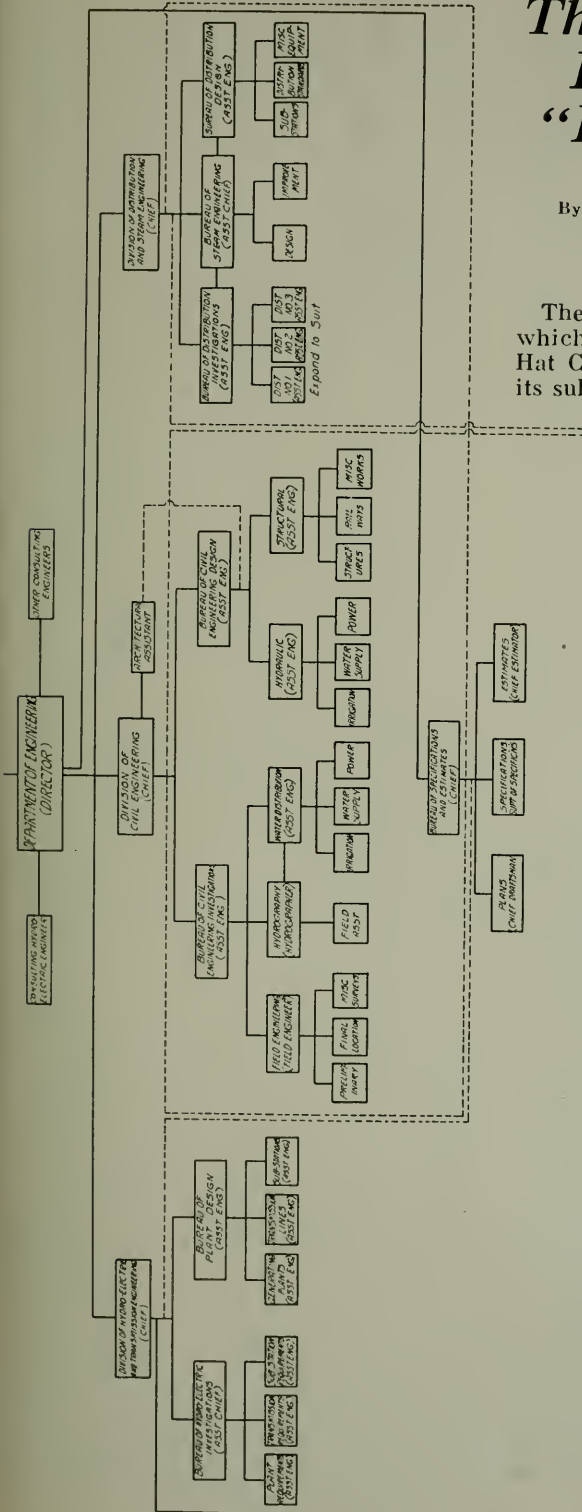
The Department of Engineering in "Pacific Service"

By FRANK M. HARRIS, Chief of the Bureau of Specifications and Estimates.

The huge hydro-electric development which this Company has in progress on Hat Creek and on the Pit River through its subsidiary, the Mt. Shasta Power Corporation, is quite commonly though perhaps somewhat hazily understood by all "Pacific Service" readers. With a peak load in excess of half a million kilowatts as a goal for 1930, the management has taken the first steps in the construction program for the chain of projected plants on Hat Creek and the Pit, with 95,000 K. V. A. under construction, with some 100,000 K. V. A. under investigation and with a possible total of 450,000 K. V. A. to be ultimately installed. So extensive a program, reaching a total expenditure estimated at \$130,000,000, required a very considerable enlargement in engineering personnel to meet the increased volume of work, greatly in excess of that heretofore undertaken.

Realizing the need of a department, the major activities of which would lie especially in technical investigation and planning, the management found it desirable to provide a separate unit for handling these features, as distinguished from the construction and operation of the properties after completion. As a result, the Department of Engineering came into existence in October, 1920, and

Organization Chart of the "Pacific Service" Department of Engineering.



during the past ten months has been making a place for itself in the annals of the Company.

Externally, that is, with respect to its relations with other departments of the Company, the Department of Engineering is charged particularly with responsibility for initiating the necessary engineering program by means of which the Company is to meet the demands of its present and prospective consumer not only for the immediate future but with a far-sighted view to probable requirements for a five year, ten year, or even longer period to come. The Company stands committed to the policy that its own prosperity, as well as the material prosperity of the territory which it serves, depends upon the economical, timely and intelligent development of the power resources of the State. It is in pursuance of this policy that the Department of Engineering is exerting its greatest efforts.

In this activity as well as in the assistance given on maintenance and operating problems, it stands in the relationship of a service department to the outlying operating divisions and to those other departments which have primarily operating, business or financial characteristics.

Inasmuch as the Company is primarily an electrical utility, it is to be expected that electric engineering, including generation, transmission and distribution, demands major consideration. Civil engineering in the form of structures, hydraulics, irrigation and water supply is involved through the operation of the secondary properties related to and growing out of the primary electrical properties. Steam engineering and street railway work also arise. Architecture relating to the proper housing of equipment and personnel likewise becomes important.

From a review of all types of problems which it was to be expected would require solution, it was found that a consistent classification could be made as among hydro-electric generation and high tension transmission engineering, steam generation and electric distribution engineering, and civil engineering. Three divisions were accordingly built into the organization to function in these more or less distinct fields, and the work and duties appropriate to each were assigned.

Two allied bureaus were also created, the one to handle specifications and estimates and the other tests and inspections, the major duties of which are obvious from their designations. These bureaus were provided for the purpose of co-ordinating those functions among the three divisions and for the purpose of facilitating the general work of the department.

Internally, the Department of Engineering follows a functional organization with little or no suggestion of either the staff or line forms. The deliberations preceding its organization developed the fact that two primary functions, investigation and design, were to be intrusted to the new department. These two functions, although entering into all problems and intimately inter-related in the finished work, require qualities and abilities of widely divergent character within their individual scopes. For the one, there must be a capacity to accumulate data, to inquire into and analyze the information, for the purpose of acquiring, in a rather broad way, an accurate knowledge of the problem at hand or to be anticipated. For the other, there must be a peculiar aptitude for solving each problem as it presents itself, practically, economically, and consistently, with full regard to the existing system and the future. This further subdivision has been carried into the three divisions by the formation of branches, one of which specializes in studies and investigations and the other attending particularly to practical planning and designing.

It is fortunate, from an organization standpoint, that the volume of work passing through the Department of Engineering is sufficient to justify this subdivision of personnel with respect to duties, inasmuch as it permits the selection of men of specialized experience and abilities, expressly qualified for the work which they are to perform.

The principal interests of the division of Hydro-electric and Transmission Engineering lie in the design of generating and transmission projects and the selection of the water wheel, generator, transformer, and switching equipment. Foremost in importance at present is the 220,000-volt transmission from the Pit River development and the reconstruction of the lines between Cordelia and the Bay Region, made necessary by the comparatively large power increases to

be met as the new Pit River plants come successfully into the system. This general problem involves elaborate insulator experimentation and tests under the record breaking voltage adopted, the location and layout of a number of substations scattered from Vacaville to Newark, and studies relating to the regulation and flexibility of the system as a whole.

The Division of Electric Distribution and Steam Engineering is largely engrossed at present in the distribution problems connected with the Pit River power after its arrival in the Bay Region. Several local substations have been found to require extensions of transformer and switching equipment. Inter-station feeders are also under investigation and design. This division will furthermore be required to devote considerable time to the problem of steam generation, since the reliability of hydro-electric generation and transmission is not sufficient at the present time to warrant the abandonment of steam reserves at the large load centers, where continuity of certain preferred service must be assured.

The activities of the Division of Civil Engineering embrace extensive studies of power and irrigation possibilities at many points throughout the northern and central parts of the State, that data may be available for extension when it shall have become necessary. All field parties on exploration, preliminary and final surveys, including the railroad location from Bartle to the Pit River plants, are under the direction of this division. Considerable attention is devoted to the design of suitable structures in which to house the generating, transmission and distribution equipment, in which work it is closely related to the other divisions. The architectural composition of the structures as well as the improvement and general enhancement of the sites have been found to merit consideration, under the established policy of the management to obtain attractive and pleasing effects where consistent with cost and utility.

New steel tower standards have been developed for the Pit and Cordelia-Oakland transmission lines. Domestic water supplies for several valley communities are being improved or enlarged to accommodate an increasing population, and existing irrigation structures and con-

duits are being reconstructed in several districts.

The Bureau of Specifications and Estimates is one of general service to the entire department in that it is called upon to co-operate with and co-ordinate the activities of all the other subdivisions. It has in addition constant contact with a number of outside departments, arising through the solicitation of proposals, preparation of specifications for contracts, the issue of construction drawings, and similar features in which other departments have interest.

The work of this bureau with respect to any particular problem usually begins with the preparation of the General Manager's estimate, by which certain funds are appropriated for the work at hand. Data for this purpose, obtained from investigations conducted within the division which has the major interest in the work, are combined with data furnished by others concerned and crystallized into definite form for approval.

It is proper that the drafting room with its chief draftsman should have been placed in this bureau, since the preparation of the drawings for all but the most minor work requires the joint attention of two, and not infrequently three of the divisions. Conference is furthermore had with the Department of Electrical Construction and Operation, since it is of the utmost importance that the design of new construction shall include all elements of value which may be derived from operating experience and shall meet the requirements of those departments which are to be held responsible for satisfactory performance. The same observation may be made of specifications which accompany the drawings. By centralizing these functions in one bureau, the drawings and specifications which are but partial expressions of the same conception can be made strictly to accord with the thought and experience of those most familiar with the problem, and to co-operate explicitly with each other.

Inasmuch as a sharp distinction can be held between architecture and other types of drawing, the architectural draftsmen have been placed under an architectural assistant in the Division of Civil Engineering in which they are exclusively interested, rather than with the remainder of the drafting force.

The Bureau of Tests and Inspections was created apart from the other subdivisions of the department in the belief that its functions could be more satisfactorily and painstakingly performed by a disinterested unit which would have no part in either the design and specification of the materials and equipment before purchase, or in their use in construction after purchase. This separation of inspection from design is in further accord with the general scheme of functional organization obtaining throughout.

The staff for this purpose includes in addition to the local testing organization, with its rather complete equipment at the testing laboratory, several travelling inspectors representing the Company at outlying plants in this vicinity and in the eastern manufacturing centers. The activities devolving upon this bureau are of the most general character and include tests and inspections of every conceivable object, from a 194-foot special transmission tower or a 35,000 K. V. A. generator, to the calibration of a delicate electrical instrument. Considerable attention is given to the standardization of meter testing throughout the system, for which purpose apprentice meter testers are recruited from the districts and after training in the laboratory are returned to their respective territories.

Having thus taken time for introspection and self-analysis, and having

set up a definite procedure for its technical and service relations with the older departments of the Company, the Department of Engineering went to work to organize with enthusiasm. The major portion of its personnel was obtained through the transfer from other departments of men particularly experienced in the type of work which they were intended to transact. In certain cases, entire units, such as the testing laboratory and the drafting room, were transferred intact, with personnel and all equipment. All divisions and bureaus have since been augmented to meet the largely increased volume of work, although the original scheme of organization has been strictly adhered to, in all details of report and responsibility.

It is believed that the Department of Engineering has justified its existence. The keenness with which it undertook the solution of its first problem has not only continued to the present, but is increasing most encouragingly as successive problems arise. Through the gradual improvement of procedure and methods with experience, and the establishment of constructive standards of operation, it is anticipated that the department will be enabled to perform the functions for which it was intended with increased expedition, and in due time will cease to be the new arrival and the unknown quantity which it was considered at its inception.



The Adaptation of Gas and Electricity to Factory Use

By C. A. ROSS, Engineer Gas Sales Bureau, San Francisco Division.



Main view of C. F. Braun & Co's foundry.

Stock and tool storage space are amply provided for. The concern is among the valued consumers of the Pacific Gas and Electric Company, using electricity and gas.

Production methods have changed during the last few years and cleanliness, order, light, heat and ventilation in the work shop are no longer regarded as philanthropy but good business sense, for better working conditions mean better work, greater output, contented mechanics and proper standardization. These features are provided for here. In our present day of great undertakings, quality and durability play as

A typical example of Northern California industry is the foundry and machine shop of C. F. Braun & Company

important a part as price, and with this in view attention has been given to factory illumination, so important to the

in San Francisco. Braun & Company are an organization of engineers of broad training, and the layout of the plant indicates that the works were planned by men who knew how. The factory consists of a complete machine shop, a tool making department, an erecting division, an iron and brass foundry, a pattern shop, a copper coil bending and a structural steel department.



General view of machine shop, showing work on heavy castings.

skilled machinist in the darker winter days or on a rush night shift job.

Individual electric drive is largely used on machine shop tools, such as lathes, shapers, planers, and for conveyors, hoists, compressors, blowers, etc. The installation totals up over 200 H. P. in various sized motors.

The accompanying photos give some idea of the scope of the several plant divisions. For example, in the machine shop are large tools for machining large surface condensers, pumps and similar machinery, and a variety of lathes, planers, shapers are in constant use in making smaller parts and tools. Special attention is given in the small tool department to precision machine tools and the manufacture of jigs, gages and interchangeable parts. Gas-fired tool-treating ovens and furnaces are used to advantage in this work as the even distribution of a constant heat means much to the tool maker.

The erecting shop is a large airy space equipped with modern cranes for hoisting and placing finished parts. High pressure air and water are available for testing condensers, pumps and other products. Pneumatic tube rollers, hammers and air compressors, together with a proper method of tool standardization, create speed and eliminate waste effort.

Another view shows the iron and brass foundry where large castings are readily made with a minimum of labor, as this division is a complete unit with furnaces, moulds, cores and core ovens all within reach of an electric overhead crane. Distinctive features here are a moulding machine and portable gas burners for mould drying as shown in photos. These burners are a recent diversion of our industrial gas engineering department. They are used here for the first time in foundry practice. They are of the Bunsen type, made of two-inch drilled pipe, providing a flame ten feet long and two inches high. They supersede the former drying method of using a wood fire, which produced a variable heat, resulting in uneven mould drying, demanded the attention of a workman and considerable valuable labor in cutting wood



View of mould making machine and finished moulds.

and cleaning fires. The gas burner operates at low cost, the volume of heat is readily adjusted, the fire is continuous and the burners portable.

The pattern shop is equipped with all necessary woodworking machinery for pattern making where accuracy is of first importance. The patterns in this foundry are laminated to prevent shrinking and warping.

The structural steel department is complete with necessary shears, punch, weld and cutting apparatus which play an active part in steel construction of cooling towers, to which the Braun Company pays special attention.

The copper coil-bending department produces all heating surface coils used in this firm's evaporators and coil heat exchangers.

Boiler feed water heaters, steam condensing systems, pumps for vacuum, air water and other liquids, fluid heaters as for oil, etc., coolers and heat exchangers, evaporators, stills, filters and aerators, cooling towers, strainers and grease extractors, valves, expansion joints and water softeners are among the specialties turned out in this plant and which find their way to the far corners of the earth. In relation to factory application the work of our industrial engineering department is gradually assuming prime importance.

Our aim is to keep in touch with industrial conditions, to participate in factory expansion and encourage efficiency, for in such co-operation we realize there is a waiting field for our product.

Taking From the Few for the Many

By RUSSELL ROBB

[Reprinted from the "Atlantic Monthly," by special permission of the publishers.]

It is easy for the public to destroy the value of private property; it is even easy for the public to take property away from the individual; but it seems extremely difficult for the public to take property, or its value, away from individuals, and at the same time increase the public's possessions.

One difficulty seems to be that the mere taking away so upsets confidence or the equilibrium of social organization, that either the value of the thing taken disappears or some new burden or privation arises which quite offsets the value of the takings. It seems, in other words, to change the conditions that produced the value of the property taken, and also the conditions that produce new value for the public.

In very bald confiscation it is seen that often very little value rests in things by themselves. A thing has value only when there are joined with it the persons who are to enjoy and use it, and also the conditions and opportunities that make enjoyment and use possible.

The loot of the mobs in Russia had great value while the old regime was in power, but the value depended principally upon the old social conditions. When the social condition changed, and the looting was a symptom and a result of the change, many of the articles taken immediately lost their value. It was easy to take the objects, but nothing of value was added to the public possessions. Ball-dresses have value where there are balls, but are of little use otherwise. Statuary, pictures, fine furniture and hangings are valuable if there are fine houses, with owners who want such things; but their value disappears with the disappearance of the conditions that make enjoyment and use of such property possible.

Until the rise of Bolshevism and its sympathizers and apologists, it seemed as if only the most elemental minds could imagine that anything was to be gained by the public through such raw confiscation as has happened in Russia;

but attempts have been made even in this country to destroy value or take away property by more indirect methods. Often it has been thought that something could be gained for the many by taking away from the few; but the public benefit seems always to shrink far below the value that is taken from the individual, and usually both lose through the effort.

For a long time, for instance, the public was deluded into thinking that anything that could be taken away from the railroads, street-railroads, lighting companies, and other public service corporations was pure gain for the public. They succeeded, it is true, in taking enormous value away from the utilities, but the value was not transferred to the public; it was only destroyed. The value that attached to these utilities existed under conditions that induced owners to put new capital into them, extend the use, and maintain the greatest service. When the public attempted to take value away from the owners by loading the properties with burdens and by insisting upon prices that were less than worth and cost, the public did not add to their own profit, but began to lose conveniences they wished to have, and, in some cases, even ran the risk of losing service, or did lose it altogether, to their own great hardship and cost.

It is curious that property of this kind has been conspicuously selected for attack. It represents a large portion of the country's permanent investment, and the investment has been made to give the public generally the advantages of the great useful agencies that have been the outcome of the last century's scientific discoveries. It is not property carefully sequestered behind a barbed fence, holding to itself technical knowledge devoted to creating benefits and luxury for a favored class. It is for the very purpose of adding to the national life the most widespread use of advantageous service. Of all forms of private property no other approaches so nearly to the ideal of socialized property. It is devoted to the

service of the whole public, regulated by bodies chosen by the public and plainly put at their mercy. It is not like land, which the individual owner may build upon or not, may use or not, as he pleases; it is not like buildings, which are too similar in kind to the property of the majority to meddle with; it is not like manufactories, which may be operated wholly, or in part, or not at all, which may be torn down or built up or changed, which may produce goods to be sold at the price that seems best for the good of the property; it is not like mines or timber tracts, whose owner disposes of them or keeps them, like any personal property; it is not like the thousand and one objects of portable property, still the most sacred kind and the best protected because most people have some of it.

We hear very much of the "common good," and of the Utopian condition when all property will be for the service of all; when the old rights of ownership will be less inviolable; when control of all property will rest with the common people; and yet the first movement that leads away from purely individualistic control and use is met, not with encouragement, but with suspicion and attack. It seems a pity that so much experience and loss is necessary before the public learns the difficulties in the way of taking value to themselves. The heartening fact is that they do learn it.

With the inauguration of the income tax, with its surtaxes, it seemed as if at last a way had been discovered by which something of value could be taken from the individual by the public, wholly to the relief and profit of the public. It seemed such "easy money" for all but the few, that there sprang up great support for a philosophy of taxation which holds not that those who dance shall pay, nor yet that all shall pay in proportion to what they have, but that those who have the most shall pay the fiddler.

As in other cases of confiscation, it has been easy for the many to take from the few, but difficult to do it to the advantage of the many. Too bald a taking creates conditions that are more burdensome than they were before. It looked like a profitable scheme to the public, this "let the rich do it;" but there is usually some reason for the existence of all things, and even the possessors

of wealth have their function in the life of the people. The possessor, in order to remain a possessor, must perform the rare and difficult feat of refraining from "blowing in" his possessions. The self-control that makes this possible has been useful to society and it has been worth while to keep it alive by a reward in the form of income return. Society is likely to find that it cannot play hot and cold; that it cannot bestow this reward with one hand and take it away with the other, and still retain the service.

It has seemed wholly good to the public to take large proportions of the large incomes, and there has been strenuous objection to anything that looked like taxing the dancers in proportion to their dancing. Experience, however, is gradually bringing to light the disadvantages to the public, even in this case, of taking from the few for the many. Great amounts that the government takes from individuals would otherwise be devoted to productive industry, would go into houses, would be lent to railroads and other public utilities, would serve generally to make capital less difficult to obtain, and would have substantial effect in lowering the capital charges that the consumer has to pay in rent and in the prices of the goods he consumes. All capital charges that enter into costs are gradually being adjusted to prevailing rates. Nothing can prevent it, and there is something like two hundred and fifty billions of wealth on which capital charges must be paid. As time goes on, there will enter into rents, and into the prices of goods that the public buys, a somewhat larger return on two hundred and fifty billions than there formerly was. The increased capital charges that consumers will pay may not be six hundred and twenty-five million dollars a year, or two billion and a half, or any amount between; but comparatively small increases in supply have often a curiously exaggerated effect on prices; and it would require a very slight effect on the rate of the capital return to raise costs to the general public by more than all that is taken by the government through the surtaxes.

The result of our system of surtaxes seems to be but another illustration of the difficulty of bettering the public by taking from the few. Justice, after all, is not so much an ideal that shines aloft, unaffected by universal law, as it is a practical reality.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION

Our Association held its annual meeting and election of officers on the evening of Saturday, November 5th, at Knights of Columbus Hall in San Francisco. The following officers were elected at the meeting to serve during the ensuing twelvemonth:

Chairman, W. M. Henderson; Vice-Chairman, J. S. Worthington; Secretary, R. W. Robinson; Treasurer, R. E. Crossman.

The following four members were elected to serve on the Executive Committee: Walter Sultan, W. H. Colick, Chas. H. Suydam and J. W. Fallon. Of these the only new name is that of J. W. Fallon, an employee of the North Bay Division, with headquarters at San Rafael.

The meeting this year was of special importance not only because of the immense strides that the Association has made during the last twelvemonth but, also, because, for the first time, there was held in connection with this meeting a convention of delegates from the various divisional sections for the purpose of electing a member-at-large to represent the Association upon the Employees' Welfare Committee of the Company.

The Association, which has been growing by leaps and bounds since its inauguration, has now a membership of over 4000 employees from all sections of "Pacific Service" territory. A year ago it was found advisable, owing to this rapid growth, to form local sections in the territory covered by the Company's operations, which sectional organizations would work in conjunction with the parent body. Results show this arrangement to have been most successful, and the convention which chose Mr. J. A. Johnson, former chairman of San Francisco section of the Association, to be the Association's representative-at-large upon one of the most important committees of the Company was businesslike as well as enthusiastic.

It will be noted that Mr. J. S. Worthington, who had occupied this honored post through the last twelvemonth, was chosen vice-chairman of the main organization.

There was a large attendance of both men and women members, numbering

several hundred. A feature of the business meeting, of course, was the report of Mr. A. U. Brandt, who will retire as chairman of the Association January 1st. In his opening Mr. Brandt referred in most complimentary terms to the sectional organizations previously referred to and said:

"The result surely proves that the idea of local sections meets the desires of the membership, and it proves, also, that the manner of their inspection and the machinery of their inauguration was wisely handled by the administration of 1920."

One result of this, as shown by the chairman, was the curtailment of the monthly general meetings which, as a rule, alternated between San Francisco and Oakland. The various divisional sections having working organizations of their own have during the past year held their own periodical gatherings and outings, and at the beginning of each year there was allotted to each division one particular feature to which as many members as could be gotten together from other divisions were bidden. The parent body, therefore, retained control of just three functions on the annual schedule, namely, the annual dinner, the annual picnic and the annual Christmas show. Concerning this policy, Chairman Brandt remarked that its wisdom had been the subject of some debate and that it was possible that the plan might from time to time be further modified with profit and pleasure to the membership as a whole.

The chairman commented particularly upon the activities of four committees and here it may be well to quote:

"Women's Affairs Committee. This committee has to some degree succeeded in extending its activities so that its work has not been confined to the larger groups of women in the bay cities. It has been instrumental in providing and furnishing four women's rest rooms and has under consideration other recommendations for our women employees in some of the smaller towns.

"General House Committee. This committee established two vacation camp

sites. There were 47 registrations at the Spaulding Camp, where a beautiful new P. S. E. A. rowboat was launched for the exclusive use of our vacationers. There were ten families and four individuals who spent their full vacations at Camp de Sabla, and possibly one hundred weekend parties took advantage of this beautiful spot. Without doubt these two camp sites will be re-opened next year and it is recommended that consideration be given to the establishment of a camp at Stanislaus, and one in the Pit River territory.

"The Benefit and Loan Committee. This committee has been most active and thorough in its work, and yet it is felt that it can expand into further usefulness in many localities. It should have a representative in every community, and be in touch with every group of employees on the system. It is only under the trials and stress incident to sickness and death that we fully appreciate and urgently need the sympathy and support of our fellow employees. Ten death benefits, totaling \$3,000, have been paid from January 1st, 1921, to the present time. A hundred or more bouquets have been presented with our sympathy and good wishes to those stricken with illness. The committee has made eight loans to employees, totaling \$1050. This branch of our activities has earned for us many expressions of gratitude.

"As a further activity along welfare lines I may state that a great deal of study and attention is being given to a 'sickness and disability plan.' We find an almost universal demand for some such benefit from many groups of our employees. We are in complete sympathy with their point of view and the only reason some such plan has not already been inaugurated is because we find upon careful study that it involves considerations and problems which we are not yet prepared to solve from an association standpoint. You may rest assured, however, that the matter will receive earnest attention at the hands of your Executive Committee and from the special committee appointed for that purpose, and that sooner or later a definite, concrete, workable plan will be presented for adoption.

"Educational Committee. This committee has laid a foundation in its one year's work which we hope and believe will last for an indefinite period to come. Its work has developed into two parts; the first being the popular lectures now

prepared and ready for distribution and use. There are thirty such lectures now ready, all illustrated by slides or films. There are six more in preparation, and of the thirty-six, sixteen have been prepared entirely by the Pacific Service Employees Association. These lectures constitute what may be called the popular or general method of education. The other part of the Educational Committee's work has been to prepare a group of study courses for the benefit of those employees who desire to organize themselves into classes for systematic and intensive study. This work is being handled by a Director of Education who is assisted by a group of technical experts whose very names and titles guarantee us that the results of their labors cannot be equaled in any institution."

Chairman Brandt discussed certain problems which were confronting the Association, as a whole, among which was the method of holding annual elections in the various local sections. "It has always been the intention," said the chairman, "that in the sectional organizations every member should have a voice in the selection of his officers and in the government of the sections. In all sections there are men and women whose duties make it impossible for them to attend their annual meetings. In many sections the distances to be traveled are so great and the questions of transportation are so involved that it is impracticable to secure a full representation at such meetings. It would, therefore, seem to be a matter of justice that we should devise some authorized means of holding the annual elections by mail or voting by proxy, so as to attain the end sought."

The report requested that this matter be given full consideration and that sectional constitutions be amended accordingly.

In conclusion, Chairman Brandt declared his opinion that the outlook for the future was full of promise. "Relying upon the splendid support and counsel of the Welfare Committee and upon the co-operation of each one of the 4024 members now on our rolls, the officers whom you are about to select can assuredly feel that their great responsibilities are fully outweighed by the more wonderful privileges accorded them in being your leaders for the coming year."

Another feature of the proceedings well worthy of mention was a brief

memorial service held in memory of our boys who went over seas and gave their lives for the cause of world freedom; also, for members who had passed away since the last meeting twelve months ago. Chairman Brandt made the opening address in which he called attention to the near approach of Armistice Day and thought the occasion ought to turn the minds of all members of the Association in the direction of the happenings over seas and, in particular, with tenderest thoughts for those who had made the supreme sacrifice.

Mr. Britton followed with a few simple appropriate words that brought tears to the eyes of all his hearers. In closing he recited Kipling's poem "L'Envoi," whose closing stanza runs:

"And only the Master shall praise us, and
only the Master shall blame;
And no one shall work for money, and
no one shall work for fame;
But each for the joy of the working, and
each, in his separate star,
Shall draw the Thing as he sees it for the
God of Things as they are!"

An attractive program of entertainment was presented at the close of which a one-act playlet, entitled, "Frank Glynn's Wife," was very ably acted by the following members of the Association:

Grover S. Tracy, Helene Aten, Lucy Keane, Mae Wilcox, Camille Looney, Zita O'Connor and Frederick H. Pelle.

The sketch was splendidly directed by Mr. Howard L. Milholland.

At the conclusion of the program dancing was enjoyed for the remainder of the evening.

The delegates' convention, previously referred to, was held during the afternoon. There were 22 delegates from 11 divisions present and the election of Mr. J. A. Johnson was unanimous. It need only be said that Mr. Johnson has been a most active member of the Association since his election to the chairmanship of the San Francisco section and that he will be of great value in his new capacity there can be no doubt.

Previous to the business meeting in the evening the delegates to the convention, members of the Executive Committee and chairmen of the various special committees of the Association, also, those who took part in the program of entertainment dined together. There was quite a program of speech making in

which Chairman Brandt, Vice-Chairman Henderson, Secretary Robinson and Attorney DuVal took part. At this Mr. Hugh Flynn, the new assistant secretary of the Association, was introduced. Mr. Flynn comes to us from important duties, first, in the Drum division and later in the Pit River region. When he was chairman of Drum division of our Association he was foreman at Wise power house, and was taken away from there to fill a similar position at the two Hat Creek plants. Now he makes a drastic change in his activities. He will have executive charge of all affairs of the Association and will carry out its policy as laid down by the executive board.

San Francisco section held its annual meeting and election of officers on the evening of October 31st, at Native Sons' Hall, with the result that the following officers were unanimously elected to serve for the ensuing year:

Chairman, C. E. Larrabee; Vice-Chairman, Geo. N. Stroh; Secretary-Treasurer, N. Sutherland.

Messrs. E. Ford and C. Suydam were elected delegates from San Francisco section to the convention held for the purpose of electing a member-at-large to represent the P. S. E. A. upon the Employees' Welfare Committee of the Company.

Mr. J. A. Johnson, the retiring chairman, read his annual report which gave a good account of a very successful year's activity. Each of the newly elected officers expressed in a few words the hopes and aims of the forward work of the Association for the coming year, and they asked the same good will and co-operation of the members which had marked the past year with success.

Chairman Brandt of the parent body spoke on the importance of having a representative on the Employees' Welfare Committee, explaining what it meant to the Association in general and the employees in particular.

An amendment to the constitution was read for the first time, providing an enabling clause to permit the formation of mutual sick and disability benefit groups. This, however, will have to be approved by the Executive Committee and finally adopted by the members in a regularly advertised meeting.

After various matters pertaining to the year's program events had been dis-

cussed, the business session was brought to a close and dancing was enjoyed for the balance of the evening.

J. A. J.

The annual meeting and election of officers of East Bay section was held on October 31st, at 518 Thirteenth Street, Oakland. The following officers were elected to serve for the year of 1922:

H. W. Beekman, Chairman; W. N. Munro, Vice-Chairman; J. C. Jordan, Secretary; Miss E. Samuelson, Treasurer.

With Henry at the wheel, East Bay section is assured another successful year. Watch our smoke!

Following the election of officers Mr. J. C. Gilson gave a very interesting talk on the achievements of man, using for examples the Panama Canal, the Suez Canal, and the Seven Wonders of the World. Dancing concluded the program.

J. L. H.

The second annual party of Shasta and West Side sections was held in Red Bluff on October 29th, in the Opera House.

The function was a combination of a "49" and Halloween masquerade party, the "49'er" section being under the direction of Shasta division while West Side contributed the Halloween effects. The hall was decorated with Chinese lanterns and a variety of green branches which gave a most artistic effect, especially felt when the soft strains of the orchestra were wafted from a bower of palms, and colored lights, the bower entrance shown by an illuminated P. S. E. A. sign.

One side of the hall was given over to the "49" section. A realistic scene was made portraying a bar-room of earlier days, consisting of an ancient bar, obtained from the town of Old Shasta, together with sundry pictures, decorations and an old bar-room stove. Grouped around this scene were all the different kinds of gambling games, consisting of Klondike, Chuck-A-Luck, Roulette, Faro, Craps, Poker and Seven and One-half. Bogus money was printed and at the end of the evening the lady and gentleman having the greatest amount of the same were rewarded with beautiful Indian blankets. Mr. Jess Marx, foreman of Kilarc and Miss Hinseley of Paynes Creek were the winners.

During the evening a pantomime of the shooting of Dan McGrew was realis-

tically staged and well received by the audience.

The prizes for the best sustained masquerade character fell to Mrs. T. B. Copeland, dressed in a costume of 1870, who was rewarded with a beautiful picture of Crater Lake, and to Mr. G. R. Milford, attired as a blase gambler, who was given a fountain pen. During the course of the evening Mr. Cameron, dressed in picturesque Scottish costume, rendered several songs, recitations and dances.

Dancing was enjoyed until 11 o'clock, when the party retired to the banquet room and enjoyed a chicken supper.

From the city office we welcomed Messrs. F. A. Leach, A. U. Brandt, R. E. Fisher, C. E. Young and many others whose names were not obtained. Visitors from Chico, Marysville, Colgate, de Sabla, Centerville and the bay regions were also in attendance, the party representing about 400 people.

T. B. C.

Characterized by the press of the division as one of the most successful entertainments ever given in Sutter or Yuba Counties, the third annual duck stew and minstrel show of Colgate section was enthusiastically greeted by close to a thousand association members, their families and friends, as well as residents of the division, on the evening of November 12th, in Masonic Hall, Yuba City.

The affair was easily the greatest yet held in Colgate division. The banquet hall was decorated with masses of holly berries and autumn leaves. At the tables where the stew was served nearly 600 diners sat when the feast began and not one departed until he or she had been surfeited with the delicious dishes which had been prepared by expert chefs.

Following the banquet the guests were invited upstairs to listen to some remarks and a song. The song was rendered by John L. Gilbert and was accompanied by Mrs. Gilbert.

A. U. Brandt, chairman of the Association, talked upon the educational and pension plans adopted by the employees.

Chairman-elect William Henderson of San Francisco then was introduced and made a brief statement of plans for the future.

This number was followed by Edward Von Geldern, who entertained with some amusing crayon specialties.

The third spasm of the big show was entitled "The Colgate Minstrels," pre-

sented by employees of the Colgate division of the P. G. & E.

The program stated that it was "The last word in agony in six gulps and four gargles, directed by Merle What-ho Bremer and Miss Madge Maynard. Among the principal artists were:

Grand Panjandrum, Dwight "Delirious" Johnson; The Colored Supplement—"Rastus Hollembones," Frank Bremer; "Lige," George Washington Brown; Frank Booth; "Ebenezer Sparerib Bones," Slim Clement; "Mose Hallujah Skeetes," Eddie Reeves; "Sambo Abroham Lincoln Smith," Mickie Hall; "Ephriam Alabam Johnsing," Tom Schofield.

The quartet, consisting of Walton Langdon, Farwell Brown, Marc Girard and Ray Curl, rendered a number of popular selections.

One of the pleasing numbers was a toe dance by tiny Miss Antoinette Teague of Marysville, who was roundly encored several times.

Included in the program were the following:

Beatrice Sheldon, Virginia White, Florence Carroll, "Billy" Gill, Alameda Hagerman, Gladys Hagerman, Clare Hastings, Frances Johnson, Maude Lubmann, Teresa Smith, R. Albertson, M. Belloni, Jr., H. Bradwell, H. E. Crowhurst, C. Duane, F. Emerson, E. H. Langlois, T. S. Madden, M. Mitrovitch, J. B. Williams, J. C. Murphy, F. A. Peck, Jr. and E. T. Woodruff.

Every number on the program was a specialty, and enthusiastically received.

Wearing a blue Chinese costume, Miss Alice Hicks during an intermission in the evening's dance offered a dancing specialty for which she was applauded long and loudly.

The educational meeting held at Station "A," San Francisco, on the evening of November 15th, proved to be an unqualified success, both in attendance and interest manifested by all who attended. In all, more than 600 people took advantage of the opportunity to inspect this immense electric generating station, which, by the way, is the largest plant of its kind west of Chicago. From the many comments heard, those who inspected the station were not only surprised but delighted by the maze of mechanical and electrical features of the plant and, above all, by the immaculateness of the entire station.

The guests were met at the south entrance of the building and divided into small groups and, accompanied by guides, began their tour of inspection. The boiler room, with 31 huge boilers aggregating over 21,000 boiler-horsepower, was first inspected; next, the auxiliary and turbine rooms, including the large turbines whirling at 1800 revolutions per minute, the step-bearing oil pumps which force the oil into the step-bearings under 1000 pounds pressure per square inch; the huge reciprocating engines that are only used in cases of emergency; the air-washers, and all the electric generating machinery. The electrical features of the station were all inspected and explained.

From the generator floor the guests were guided over to the oxide-house, loaned for the occasion by Mr. J. M. Dickey of the Potrero gas plant. The building had been transformed into a temporary theater. Mr. Lane, of San Jose, gave a most illuminating lecture on "Electrical Generation." No P. S. E. A. meeting being complete without a few words from our popular general chairman, the people were treated to a short talk by Mr. A. U. Brandt. Our district chairman, Mr. J. A. Johnson, next announced the winner of the "Winning the Public" essay contest as being Mr. W. Seebe, of the electric meter department. Mr. Seebe was introduced and read his prize winning essay. Then the benches were removed and dancing to music furnished by the Potrero jazz orchestra completed the pleasure of the evening.

The educational committee, Mr. F. Talcott, chairman, and Mr. F. T. Ellis, superintendent of Station "A," should feel highly elated over the success of the evening.

B. L. C.

At an educational meeting held Monday evening, November 14th, at 518 Thirteenth Street, Oakland, Mr. James M. Dickey, engineer of operation, gas engineering department, San Francisco, gave a very interesting and instructive lecture on gas production to the workers of East Bay Section.

Lantern slides showing how gas is made from the beginning until it enters the distribution mains were shown and explained by Mr. Dickey.

J. L. H.

The Financial Side of "Pacific Service"

Following is condensed approximate income account statement for the month of October, 1921, compared with the same month last year:

CONSOLIDATED INCOME STATEMENT (Including operations of Mt. Shasta Power Corporation)

MONTH OF OCTOBER

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$ 2,998,966.57	\$ 2,998,175.95	\$ 790.62	
Maintenance.....	258,404.10	254,002.00	4,402.10	
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	1,712,600.38	1,903,729.88		\$ 191,129.50
Total Expenses.....	\$ 1,971,004.48	\$ 2,157,731.88		\$ 186,727.40
Net Income.....	1,027,962.09	840,444.07	\$ 187,518.02	
Net Interest Charges.....	379,701.73	389,840.42		10,138.69
Balance.....	\$ 648,260.36	\$ 450,603.65	\$ 197,656.71	
Bond Discount and Expense.....	33,266.83	30,064.68	3,202.15	
Balance.....	\$ 614,993.53	\$ 420,538.97	\$ 194,454.56	
Reserve for Depreciation.....	283,333.34	232,588.84	50,744.50	
Balance to Surplus.....	\$ 331,660.19	\$ 187,950.13	\$ 143,710.06	
Dividends Accrued on Preferred Stock.....	193,458.73	153,913.58	39,545.15	
Balance.....	\$ 138,201.46	\$ 34,036.55	\$ 104,164.91	

As in all our monthly statements since July, the outstanding feature of the October operations is the large reduction of \$186,727 in operating expenses, notwithstanding an increase of more than \$100,000 in reserves for taxes and contingencies. October sales of electric energy increased 5 per cent, and gas sales 2 per cent. The number of customers added in October was 3,743, making a gain of 29,846 in the twelve months to October 31st, 1921, and bringing the total number of customers served at the close of October up to 592,671. Owing to several rate adjustments during the past year, these figures, rather than gross earnings afford an accurate index of the increase in volume of business. Our gas business, contrary to the experience of practically all other large gas companies outside of California, has held up remarkably well throughout the business depression, and for the ten months to October 31st, shows a gain in volume of sales of 9 per cent. The Company has at this time tied up in new hydro-electric developments and other construction work which has not yet reached the income-producing stage, approximately \$17,000,000. The major portion of this new capital should begin paying its way about July 1st, 1922, with the completion of our Pit River Plant No. 1, having a capacity of 93,834 H. P. This additional energy will be readily absorbed through the normal growth of business, which is again in evidence, and in replacement of energy generated at higher cost in steam stations, or purchased from other companies. The recent sale of \$10,000,000 of 6 per cent, 20-year bonds, plus \$4,300,000 cash in the treasury at the close of October, will, it is anticipated, leave the Company with ample funds to carry on its construction program throughout the year 1922. The book value of the Company's plants and properties at October 31st, 1921, exclusive of current assets, was \$180,151,000, and the net earnings, after depreciation, during the twelve months' period were approximately 6 per cent on this value.

Comparative statement for the twelve months ended October 31st, follows:

TWELVE MONTHS ENDED OCTOBER 31ST

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$37,619,047.03	\$33,423,329.59	\$ 4,195,717.44	.....
Maintenance.....	3,293,713.17	2,584,846.39	708,866.78	.....
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	20,871,070.01	19,768,314.30	1,102,755.71	.....
Total Expenses.....	\$24,164,783.18	\$22,353,160.69	\$ 1,811,622.49	.....
Net Income.....	13,454,263.85	11,070,168.90	2,384,094.95	.....
Net Interest Charges.....	4,747,745.41	4,460,032.68	287,712.73	.....
Balance.....	\$ 8,706,518.44	\$ 6,610,136.22	\$ 2,096,382.22	.....
Bond Discount and Expense.....	385,785.75	281,090.16	104,695.59	.....
Balance.....	\$ 8,320,732.69	\$ 6,329,046.06	\$ 1,991,686.63	.....
Reserve for Depreciation.....	3,298,596.81	2,739,705.20	558,891.61	.....
Balance to Surplus.....	\$ 5,022,135.88	\$ 3,589,340.86	\$ 1,432,795.02	.....
Dividends Accrued on Preferred Stock..	2,132,516.02	1,777,948.51	354,567.51	.....
Balance.....	\$ 2,889,619.86	\$ 1,811,392.35	\$ 1,078,227.51	.....
Dividends Accrued on Common Stock..	1,700,202.90	1,700,202.90	.....	.....
Balance.....	\$ 1,189,416.96	\$ 111,189.45	\$ 1,078,227.51	.....

SALE OF FIRST AND REFUNDING MORTGAGE 6% BONDS, SERIES "B"

During the month of November the Company sold to The National City Company, \$10,000,000 par value of its First and Refunding Mortgage 20-year 6 per cent Bonds, Series "B." The new bonds found a ready market, as indicated by the following clipping from the New York "Herald" of November 23rd, 1921:

"PACIFIC GAS ISSUE SOLD"

"Receiving word over the long distance telephone on Monday night to the effect that the Railroad Commission of California had approved application of the Pacific Gas and Electric Company to issue \$10,000,000 of its first and refunding mortgage non-callable twenty-year 6 per cent, series B bonds, the National City Company, E. H. Rollins & Sons and the Mercantile Trust Company of San Francisco decided to open at 11 o'clock yesterday books for the offering at 98½ and interest to yield about 6.10 per cent. One-half hour before the opening of the books the applications had exceeded the amount offered and consequently the books were closed as soon as they were opened. The proceeds of the issue will be devoted principally to the active development of the Pit River water powers and to reimburse the company for construction expenditures made. Its net earnings in all of the last four years have been double its interest charges or more."

MATURITY OF EDISON LIGHT AND POWER COMPANY'S BONDS

On November 3rd, 1921, \$623,000 par value of the Edison Light and Power Company's First Mortgage 6 per cent Bonds still outstanding reached maturity, and were paid upon presentation at the company's office. At the time of writing all except two of these bonds have been presented and paid.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF
THE PACIFIC GAS AND ELECTRIC COMPANY

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A. F. HOCKENBEAMER - - BUSINESS MANAGER
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The Pacific Gas and Electric Company desires to serve its patrons in the best possible manner. Any consumer not satisfied with his service will confer a favor upon the management by taking the matter up with the district office.

VOL. XIII NOVEMBER, 1921 No. 6

EDITORIAL

Hon. Harvey D. Loveland, member of the California State Railroad Commission, in a recent address upon the public service problem set forth in clear terms the policy which is being followed by the Commission in dealing with this problem in the best interests of the commonwealth of California.

"It is fundamental to say that regulation, to be fair and reasonable, must be based upon justice and equity to the public and to the public utilities. Upon this principle only can it become of real and lasting benefit to the public," said Mr. Loveland. He then gave the following general rules for observance, "as closely as circumstances will permit."

First: Adequate service based upon just and reasonable compensation. Service at less than cost cannot long be continued even under legislative fiat or administrative orders. Public utility service is no different in this respect than any other business.

Second: Regulation should encourage and promote economy and efficiency.

Third: After a reasonable standard of service has been prescribed, except in unusual cases the method and detail of the service should be left to the utility. In other words, regulation should correct errors, but avoid unnecessary interference which unduly increases the cost of regulation.

Fourth: Regulatory bodies should keep in mind the fact that regulation does not mean State or municipal ownership; that ownership of property should entitle the owner to the beneficial use thereof and management under reasonable regulation must abide with ownership.

Mr. Loveland claimed as one of the main achievements of the Railroad Commission in the years of its new existence the insuring to utilities protection in the fields they serve as long as such service is adequate and at reasonable rates. "This means," said the Commissioner, "that utility fields cannot be invaded by unjust competition which, splitting up perhaps among several corporations the possible earnings, prevents adequate service by any and increases cost thereof."

Mr. Loveland declared many utilities to be monopolies by their very nature, and announced the principle as laid down by the Commission that such as satisfy their patrons and grow with the needs of their territory shall be protected. "In other words," said Mr. Loveland, "regulation should and does mean protection."

Discussing increased rates for public utility service during the war period, he observed that had utility rates been permitted to keep step with the advance in commodity prices, the people of California would have had to pay many millions more than they did for utility service. The average increase in commodity prices in the period from 1914 to 1921 was 72 per cent, while the increase in rates given to public utilities by the Railroad Commission averaged from 25 per cent to 40 per cent.

This candid outline of policy on the part of Mr. Loveland should go far toward refuting the mis-statements that are being spread broadcast by political agitators and others who would find fault with the present system of State regulation because it is not entirely one-sided.

At a special election held recently in Lowell, Mass., the voters of that city were asked to decide whether the city should purchase and operate the local gas plant. This was the only question to be decided at the election, consequently it cannot be claimed by the opponents of municipal ownership—for the vote went against the proposition—that the good citizens did not pay particular attention to it.

This election is the more important as the State of Massachusetts has always been regarded as more or less in sympathy with the municipal ownership and operation of public utilities.

Upon this widely discussed subject our attention has been called to a recent editorial in the Fresno "Republican," in which the opinion is given that the municipal ownership agitation is beginning to dwindle in popular favor. We may be pardoned from quoting from this editorial, as follows:

"The pressure from the public for municipal ownership of utilities has almost disappeared, because the pressing need for it has gone. We have something else in its stead. Most people think that we have a very good substitute, perhaps something better rather than something just as good. We have State regulation.

"State regulation has wiped away much of the urge for municipal ownership. Not all, perhaps, but State regulation is still in its infancy. It has not been properly or thoroughly worked out. The machinery for State regulation may still halt at times. But it is working. It is requiring the utility corporations to give more equitable service than they ever have given before. *And the spirit within the corporations themselves is much higher and better and tends to more efficient service.*" The enormous profits which it was once popularly supposed were made out of utility charges are now absolutely prevented. The return to the owner is limited. The return to the promoter and manager is supervised. The return to the consumer that might have been made through public ownership by means of decreased charges is actually made to him through State regulation of charges."

The following is taken from an article written by William Feather, a Cleveland publisher, published in the Philadelphia Public Ledger:

"I am writing this in the living room of my home, on a typewriter that weighs no more than a moderate sized book.

"Light is provided by a lamp in which burn two incandescent bulbs.

"In an adjoining room is a telephone from which I can talk to any city on the continent.

"On the wall is a thermostat which regulates the flow of gas in my furnace

and keeps the room at an even temperature of 70 degrees.

"A music cabinet contains records of the finest arias from the best operas, and selections by the greatest musicians in the world. I can hear this music, leaning back in a comfortable chair while I smoke a cigar and I don't have to defer to anyone in making up my program for the evening.

"Almost within arm's reach are several shelves of books filled with the most profound and beautifully expressed thoughts of the ages.

"The floors of my home are cleaned with a suction sweeper, while the clothes are put through an electric washer and ironed in an electrically-driven mangle.

"My children attend a school where they are given a better education than the sons of kings could demand a century ago.

"I go to work in a machine which some people call an automobile, and I travel a distance in three-quarters of an hour which would have been an all-day trip for my father a generation ago.

"I enjoy all these things and yet I am just an ordinary citizen with an ordinary income, living in an ordinary way. Tens of thousands have just as much as I—and more.

"And yet I kick and wonder what ails the world.

"Were the good things of life ever so easily at the command of the ordinary man as they are today? Don't we all do a lot of welshing that we haven't any right to do? And if we aren't careful, isn't there danger that we will upset the greatest civilization the world has ever known?"

"It is a suicidal policy for a city or a State to cripple the public service corporations," says one of the recent bulletins of the Manufacturers and Industrial News Bureau, "and this fact is very quickly demonstrated." The bulletin continues:

"The average public utility turns back 90 per cent of the money it receives into local business and trade channels.

"Every thirty days, ninety cents out of every dollar is paid out for labor, salaries and material and distributed in the community.

"There is no such thing as a prosperous State without prosperous cities and there are no prosperous cities without money-making utilities."

Tidings From Territorial Divisions

East Bay Division

"Like biscuits? We'll say so!" And so said many of the 165,000 visitors who attended the East Bay Manufacturers' Fair at Idora Park, October 1 to 9. For, in an ideal location, close to the main entrance at the Fair, pretty Betty Brown deliciously cooked and delicately served her better biscuits. "Light as an aeroplane," she said; but here is the secret of the process whereby said lightness was obtained. The biscuits were electrically baked—baked by the energy developed up in our snow-capped mountains—baked in an oven where even temperature was maintained by carefully regulated voltage.

In every way the exposition was a tremendous success, and the 125 exhibitors supplied a display so wide in scope and so complete in detail as to constitute a liberal education for anyone who cared to devote a little study to each booth.

The fair did much to bring home to the people of the East Bay cities the fact that this territory is growing at a remarkable rate. Many of the industries were comparatively new ones. Each represented a demand for power—for courteous and continuous service.

The "Pacific Service" booth attracted many people, especially when biscuits were being handed out. The booth was extremely attractive, being decorated in two striking colors, orange and black. The snow-white background made an ideal setting for the gas and electric ranges standing guard in military fashion on either side of the booth. Biscuits were baked alternately in both ranges. Occupying a regal position in the center was the No. 101 Humphrey Radiantfire, with its massive andirons, a very attractive appliance and one which brought forth many comments of approval. Pictures of our power plants, always appropriate, set off the background in an attractive manner and a framed stock sales sign gave rise to many inquiries regarding the power company's securities. These were intelligently answered and, in several cases, wrong impressions corrected.

More than three hundred visitors signed the registration book as being interested in electric cooking and gas heating.

On the whole, it was a successful event and the East Bay division feels that it has taken a definite step forward in furthering better public relations.

A. V. FARNSWORTH.

Berkeley has many interesting students attending the State University. Miss Blanche Adella Hawkins has the distinction of whistling her way to higher education. She came to Berkeley this fall from Pasadena and conceived the idea of earning her way by teaching other girls to whistle. All this was in absolute defiance of the old adage that "whistling girls and crowing hens always come to some bad end." She opened a studio and began utilizing her accomplishment. Her imitation of feathered songsters has made many converts to the thought of making music through their teeth. The novel idea of whistling one's way through a university is only another exemplification of the resourcefulness of the modern girl.

Pleasanton is again the scene of "movie" activity. More than fifty people and forty horses arrived in Pleasanton in preparation for the shooting of a picture which, among other things, will include a steeple-chase on the Pleasanton track. The picture will be modeled after the exhibition which took place on the visit of Douglas McLean and his company some time ago.

Livermore is still in the heart of a wild and rugged country insofar as the mountains are considered. Mrs. Mary Frost Armstrong, a cowgirl and winner of the rodeo, has succeeded in retaining 320-acre homestead in the Livermore mountains. Walter M. Crow, a neighbor and world-war veteran, contested her claim. He insisted that Mrs. Armstrong did not remain on her homestead a sufficient length of time as required by the land laws. She admitted this to be true, but accounted for her absence owing to

being laid up in a hospital recovering from a fall while riding in a rodeo.

Mrs. Armstrong took up her homestead under the stock-raising act in the wilds of the Livermore mountains, some 27 miles from the nearest postoffice. Recently she married Edgar Armstrong, bronco buster, who, as "Sleepy Armstrong" has been doing hair-raising stunts in the "movies" at Los Angeles. The Land Department has decided that she is entitled to complete her homestead. With this decision that she will not lose her stock ranch, she has set about to get a big bunch of cattle to put on her place. She will ride her pet horse "Mickey" over her range and see that not a single steer goes astray.

One of our large consumers, the Hammer Bray Company, manufacturers of the well known spark gas range, has added to its equipment the largest gas-fired oven in this vicinity. This oven is to be used for japanning parts for their ranges. The consumption will approximate 50,000 cubic feet monthly.

A recent noteworthy installation in this district was the No. 54S Bryant boiler installed for Mr. H. Bruning, 537 Seventh Street.

Sulstaff Company, dealers in plumbing and gas appliances, have purchased a downtown lot and will build a Class A building which will answer their rapid growth since they have come here from San Francisco.

They hope to be in their new home by March, 1922.

H. T. Thornton is building a vaneer mill at First and Cedar Streets, Berkeley. This new addition to Berkeley's industrial growth will use approximately 100 horsepower. An extension of our lines to supply them is now under construction.

Electric ranges are gaining new friends every day and adding to the Company's revenue. Many applicants for light in the rural districts are able to secure more liberal extensions of our lines by installing an electric range than would be the case if their use was limited to lighting only.

At a recent meeting of the employees Wm. Lucio, agent San Leandro, related the history of that district as follows:

San Leandro, situated eight and one-half miles east of Oakland, reached by the Lincoln highway on the north, East Fourteenth Street through the center and by an old road recently re-opened along the bay shore from Alameda. It gets its name from St. Leander, Bishop of Seville, Spain, later changed to San Leandro.

The first settler was Don Jose Joaquin Estudillo, who arrived in 1836. Estudillo Avenue was named after him; also the old Estudillo House still standing, but since remodeled, was the center of all social events of that day. When the county was organized in 1853, Alvarado became the county seat, but in 1854, political influence gained the privilege for San Leandro, erected a courthouse and jail where the St. Mary's Convent now stands, at a cost of \$1200. In 1874, it had to surrender its leadership to her more powerful neighbor, Oakland.

In 1861 a railroad was built from Alameda to Hayward. It came through San Leandro along what is now East Fourteenth Street. The station was about 100 yards east of our office. This was short-lived and a financial failure.

San Leandro has long been noted for its cherries, but at the present time all of the large orchards are being sold and cut up into residence property.

It has three modern schools, four churches of the leading denominations, two banks, twelve fraternal orders, five of which own their lodge rooms, one tractor plant, one pencil factory, two canneries, one pickle plant and a hay-press factory.

It is one of the wealthiest cities in California. It has a deposit in banks for every woman and child of approximately \$800, not including Liberty bonds. Total deposits September 6th, \$4,351,004. Its population is 5,200.

Gas was first made in the early '80's and sold at \$3.50 per 1000 cubic feet. They had 36 consumers and 11 coal-oil street lamps at \$1.50 each, and when the Suburban Company bought them out the gasmaker, who was also statement taker, collector and treasurer, took all the books and they had to go out and find the meters, services, etc.

The Suburban Electric Light Company was organized September 14, 1901, in San Leandro, by Wm. Angus, who was

secretary to Prince Poniatowski, who was associated with early power development in California.

Starting with 22 consumers, lighting rate 10c, \$1.00 monthly minimum, power rate 6c, \$2.00 monthly minimum.

Before the Suburban was in existence, however, the Electric Railway Company sold some D. C. current for power and light.

Mr. Lucio's career started in 1906, as statement taker, collector, billing clerk and bookkeeper. His title was assistant secretary.

At the present time we have in San Leandro 1409 electric consumers, 1411 gas consumers. Average growth the past nine months in San Leandro is twenty-five new gas and electric connections per month.

E. B. DEVISION.

❖
Sacramento Division

We are filled with exultation over the fact that the State of California has put up for sale the bonds covering the expense of the erection of the two buildings that are to occupy the Capitol extension blocks between "L" and "N" Streets and 9th and 10th. These are to be magnificent edifices, which will house the State courts, the State library and all of the other offices of the State government, which, at present are located in many different buildings in Sacramento. This will, also include, the State motor vehicle department.

These bonds were purchased after an exciting contest by the Bank of Italy. This means great assistance to the working classes. Work will begin by the first of the year.

In the improvement line let us mention the fact that the Sacramento baseball park, some time called Buffalo Park, is being entirely remodeled. The field is being enlarged, the stands increased to more than double capacity. The fences are being moved farther from the home plate and everything is being done to make the park an up-to-date ballground. The first people to be employed were the members of last year's team who desired to take a hand in the reconstruction. The whole involves an outlay of about \$75,000.

In perusing recent statistics we note the following of interest to us:

Sacramento Valley leads the State for health. It is the most healthful section of California, with the lowest death rate per 1000 population, says the report of the State Board of Health, for 1920. The Sacramento Valley group rate is 9.31 persons per 1000, while the average of the entire State for the same period is 13.50 per 1000.

Five of the ten counties showing the lowest percentage are in Superior California.

The U. S. Weather Bureau reports the following average temperature for Sacramento:

Spring	59 degrees
Summer	71 "
Fall	62 "
Winter	48 "

The average life span in the United States is 36 years. The average life span in California is 50 years.

Move to Sacramento and prepare to live!

The wonderful weather we are enjoying has been a Godsend to the rice, bean and raisin growers. Practically all these crops are now in the warehouses and being converted into cash. It is estimated that there are 2,500,000 sacks of rice in the warehouses today. The demand is strong from Japan for clean rice and everything looks good for a very profitable year.

We are to have in Sacramento one of the finest, best furnished, most modern hospitals in the West. It is to have 160 beds and is being financed by and constructed under the supervision of the doctors of Sacramento. It goes without saying that no effort will be spared to have this institution one that will be the last word in both construction and equipment. It is estimated that it will cost approximately \$500,000. The location is on the half block between Twenty-eighth and Twenty-ninth Streets, on the south side of "L," immediately opposite Sutter's Fort.

The residence building boom is still on. It is very encouraging to see the hundreds of splendid structures being erected for residence purposes. And, it is absolutely necessary that this shall con-

tinue. It has been estimated that the present shortage of residences in the United States reaches the enormous total of 1,250,000 houses.

THE CAPTAIN.

San Joaquin Division

Mr. and Mrs. O. O. Taylor recently welcomed into their home a seven-pound baby son. The entire division extends hearty congratulations to Mr. and Mrs. Taylor. Mr. Taylor is our agent at Turlock.

Mr. F. H. Momsen, our agent at Sonora, passed away on November 8th as the result of an operation. Mr. Momsen had been at Sonora for the past two years, and previous to that time had served the Company at Sacramento for a number of years. Loyal to duty and to the interests of the Company, genial and pleasant with all who crossed his path, Mr. Momsen leaves many friends and acquaintances among employees and consumers in this division who deeply regret his untimely death. The heartfelt sympathy of the entire division is extended to the sorrowing widow and family.

The Modesto and Turlock irrigation districts recently awarded contracts for the electrical machinery at the Don Pedro power house, which is being constructed jointly by the two districts, in the amount of \$286,566. The contract for the waterwheels and governors was awarded the S. Morgan Smith Company of York, Penna., the contract for generators, transformers, switches and switchboards went to the General Electric Company, and the contract for penstock lining and pipe went to the Western Steel & Pipe Company of San Francisco. The Don Pedro dam and power house, from present indications, will be completed sometime within the next two years.

Mr. M. P. Werry, who for the past ten months has held the position of superintendent of Electrical Generation, having charge of the power houses in the division, has been transferred to the Pit River

development, where he will have charge of all the power houses of the development. While we shall all miss Mr. Werry very much, we cannot help but congratulate him upon this golden opportunity which has come to him, and wish him every success in his new work.

The following account of a farewell to Mr. and Mrs. M. P. Werry at Electra power house on the occasion of their last visit to the plant before leaving for the north is given by one who was on hand and is therefore well qualified to speak:

"There is scarce a life, however uneventful, that does not experience an extraordinary happening sooner or later. Even so with the Electra power plant. Operations at this plant have run along so smoothly from year to year that there has been very little occasion for the unusual, hence not much news. So when we said goodbye to Mr. and Mrs. M. P. Werry on November 12th it was a signal event in the history of Electra.

"Mr. and Mrs. Werry slipped into Electra about 4 a. m. on the twelfth, while everyone off duty was slumbering peacefully. We had only been on shift a short while, however, when they surprised us, exclaiming that we had better prepare for "adios," as they were on their way to the Far North. Together they then visited the cottages, endeavoring to make that word "farewell" linger as long as possible. It kept them for lunch and gave the ladies time to muster their forces for the presentation of a remembrance from Electra.

"It was after lunch, and about a dozen gathered in the warehouse, intent on having the pleasure of last words with our former "boss" and his wife. Mr. Smith, on behalf of the employees, presented to Mrs. Werry an electric percolator. Addresses were made, and then bag and baggage were brought out, "bon voyage" and success in their new undertaking were wished Mr. and Mrs. Werry, and Dodge No. 904 rolled along the mountain road, out through the canyon and away from Electra, having served its allotted time to this territory; a time short in reality yet rich in pleasant remembrances; a time of real worth appreciated and reciprocated with hearty co-operation."

The Oakdale and South San Joaquin irrigation districts have employed Mr. A. J. Wiley, consulting engineer of the Modesto and Turlock irrigation

districts on the Don Pedro dam project, to make preliminary plans and surveys covering the proposed Melones dam, which is located in Iron Canyon, on the Stanislaus River, about ten miles upstream from the old Knights Ferry power house. The present estimates provide for a 170-foot dam which will store approximately 98,900 acre-feet of water, and will cost approximately \$1,000,000. It is estimated that power can be generated at this dam to the extent of about 30,000 kilowatts for possibly six months in the year. Further information regarding this will be available at a later date.

S. J. D.

Shasta Division

The Kaiser Paving Company, who have the contract for the State highway between Red Bluff and Redding, have completed the highway between Red Bluff and Cottonwood and are now working between Anderson and Redding.

Gravel for the road bed is obtained from Clear Creek, where a temporary 60 K. V. substation with two 75 K. W. transformers are installed to supply them with 135 H. P. at 440 volts.

The Kaiser Paving Company average 1000 feet of highway a day, their largest run being in excess of 2000 feet in 10 hours.

The Mountain Copper Company of Keswick are starting operations again and are constructing an aerial tram line from their mine to Motion, a distance of two miles. Ore will be transported over this tram line in buckets, a loaded bucket going from the mine to Motion drawing an empty bucket to the mine.

The tram line will be constructed of wooden towers and will go under our Kennett-Redding 60 K. V. line where a 100-foot mast is being erected in order to give them the necessary clearance.

Three 150 K. W. transformers have been installed at Washington substation, near French Gulch, to care for additional load of the Hazel gold mine.

We are very sorry to lose the services of Mr. H. W. Bertholas, foreman of Coleman power house, who is taking a two-year leave of absence in order to attend the Polytechnic School of engineering in Oakland. Henry, as he is known to his associates, has been with the Company

for the past fourteen years and has made an enviable record. He will be succeeded by Mr. F. Geis, formally first operator at Coleman. Good luck to you, Henry.

C. M. C.

West Side Division

Here is a tribute to "Pacific Service" which we may be pardoned for reproducing:

ORLAND CHAMBER OF COMMERCE
352 Fifth Street
Orland, California.

November 14th, 1921.

Pacific Gas & Electric Co.,
San Francisco, California.

Gentlemen:

The directors of the Glenn County Livestock & Agricultural Association, desire to express to your company, their appreciation of the courteous treatment rendered by your company through its local manager, Mr. Thode, in handling the wiring of our grounds and buildings.

It is this spirit of courteous consideration and careful workmanship that has placed the Glenn County Fair, well up towards the head of the list among the fairs of the state.

Very truly yours,

By E. A. KIRK, Secretary.
J. H.

Fresno Division

Fresno County is one of the leading counties in the world as far as agricultural products are concerned. One of the main factors for the prosperity of this county is laid to the fact that the system of co-operation has been adopted. That is co-operation in buying and selling.

The California Associated Raisin Company, for instance, did more for the good of Fresno County and the San Joaquin Valley than a great majority of other things that have made county and valley prosperous.

Fresno County has shown the greatest increase of any county in the country in the valuation of farms and in the number of farms during the past ten year period. Fresno County stands second only to Los Angeles in the entire United States for the value of farms.

Fresno farms are worth \$75,000,000, in all, or \$28,000 each.

Raisins comprise seven-tenths of one per cent of the total retail grocery business of the country, according to figures gathered by the National Wholesale Grocers' Association. This means, according to interesting statistics gathered by Lord & Thomas and presented to the California Associated Raisin Company, that the raisin sales through the retail stores led many of the articles that are considered staples.

As an example, raisin sales were more than double those of macaroni, dried fish, gelatin, dried vegetables; more than three times the total sales of canned fruit, syrup and molasses, jelly and jam; and the total of raisins exceeded such articles as baking powder, oil, cocoa and chocolate, matches, olives, canned meats and sardines.

R. L. D.

Colgate Division

Marysville played host to ten thousand visitors from all portions of Northern California on Armistice Day, when Yuba-Sutter Post of the American Legion staged one of the largest celebrations ever given in this part of the state.

The day opened with a grand salute of 21 guns followed by a lengthy parade in which was represented every fraternal organization in the two counties as well as business houses and others. Later in the morning appropriate memorial exercises were conducted after which ex-service men were served luncheon in Legion Hall.

The afternoon provided a variety of interesting athletic events opening with a baseball game at 1 p. m. between Coast League stars and Sacramento Valley stars.

Harry Hooper, Boston Bill James, Pewee Hall, Lebourveau and others well known composed the valley aggregation, while Schang, McGinnis, Kunz, Sheehan, Rodgers, Orr, Penner and others were on the diamond for the big leaguers. The result of the game was a 4 to 0 victory for the latter nine.

Marysville and Grass Valley high schools played football immediately following the baseball game, Marysville administering a sound trouncing to the visiting eleven.

The crowning event of the celebration was the sham battle staged before a throng of approximately 8,000 people, commencing at 7 p. m. The opposing armies were drawn up in trenches on a large field south of the city of Marysville and amid the roar of cannon and the flash of star shells every phase of an actual bitterly fought battle was enacted with thrilling realism. Thousands were unable to witness the battle because of traffic congestion on the road. Automobiles four abreast were halted a mile from the scene and were unable to extricate themselves for an hour and a half after the last phase was enacted.

The celebration was closed with a grand ball.

The annual Older Boys' Conference, conducted by the Y. M. C. A. was held this year in Colusa, where several score young men and boys were guests of Colusa residents for two days early in November. At the various sessions the following Colgate division boys and men were numbered among the speakers: Ray Wheller, Lincoln; J. B. Wilbur, Oroville; J. W. Douglas McWilliams, Sutter; Laverne Bacon, Biggs; Franklin Hinshaw, Gridley; Joe Hoon, Marysville; Elmer Neal, Live Oak and Earl Adams, Marysville.

Oroville's Orange and Olive Exposition this year occurred during the last month and figured among the big events in California in 1921. The fair was officially opened by James Mills, Hamilton City orchardist, and was voted to have been the most successful exposition Oroville has ever given.

Rotarians of Marysville and Sacramento recently joined members of the Chico Rotary Club in the latter city at a grand get-together banquet and dance. A team from the Marysville club put on a wedding in which Oroville and Chico were united, thereby allying the interests of the two communities. Ed Johnson, a Marysville Rote, assumed the role of parson and married the pair with all the solemnity possible. Ike Adams, a Chico Rote, was an interested onlooker.

The olive crop, always large in Colgate division, is said to be heavier than usual this season. Two tons per acre is the expected yield on the B. B. Meek grove, south of Marysville, and around Oroville

the crops are equally good, according to report. Sutter County has a small acreage which is yielding abundantly this year.

F. B.



San Francisco Division

There will soon be placed in commission our new substation in San Francisco, to be known as Station "B."

This station is located on Main Street just south of Howard Street, and when completed will consist of a 1000 K. W. 250 V motor generator set and a balancer set. This station will supply only direct current, tying in the rest of the D. C. Edison system at the lower end of San Francisco and handling that portion of the load along the waterfront and manufacturing district.

On November 10th, at 8:20 p. m. the new 11,000 cables which feed the station from Station "C" were built up. We used for this test a 2,000 K. W. motor generator set at Station "C," which was brought up on the D. C. side, and in that manner the motor on the machine acted as a prime mover, continually building the cables up to 12,500 V. After the cables were built up they were cut out and the 1,000 K. W. motor generator set at Station "B," was tied in on one of the feeders, which was again built up from Station "C," this time building up the motor generator set with the cable. After the generator was brought up to normal speed and voltage, and the various instruments tried out, the machine was again cut out.

The next test was to start the machine over the direct current bus which had been previously energized from the underground system. After the machine was started and brought up to normal speed and voltage, it was synchronized on the A. C. side with one of the cables from Station "C," thereby putting the machine in operation on the line.

In the near future we expect to turn over the balancer set and the other motor generator set, so that this station will be running under full load conditions for our winter peak.

W. R. BAKER.

put forth day by day by our organization as a whole are appreciated, the following should go far to dissipate such doubt:

HUDSON BAY FUR CO.

222 Powell Street.

San Francisco,

October 29, 1921.

Pacific Gas & Electric Co.,
445 Sutter Street,
City.

Attention Gas Heating Department.

Gentlemen:

The gas furnace which you installed at my home at 1830 Lake Street is more than satisfactory, and my bills in comparison with the Coal Heater which I had, are much less. I am getting a great deal of comfort out of it, as it does away with the nuisance of filling the furnace with coal, bothering with ashes and starting fires.

I have spoken to several people who have asked me about this automatic heater, and I can recommend it very highly. I can't see why you people don't make more capital out of it, as it is a great convenience, and does away with any work.

One has a great pleasure in doing business with the Pacific Gas and Electric Company, such as when you furnish estimates without adding extras on your bills and when anything is not right you always make it good.

Yours very truly,

GEORGE H. BENIOFF.

P. S.—The automatic feature is what appeals to me most, as it starts at the satisfactory time in the morning and keeps the house at the desired temperature all day and all night, if necessary, at an even temperature.

(There are 2 Hall Units and a No. 55 Minneapolis Heat Control installed here.)

During November the first length of the 500,000 C. M. 3-conductor 11,000 V cable was installed in the new duct line which connects Station "I" with Martin Station. There are two of these cables to be placed in operation and they will bring hydro-electric energy by way of Martion Station directly into the heart of San Francisco.

A new cable grip designed by the Engineering Department was used to draw

If there is any doubt in the minds of anyone that the efforts which are being

this cable into the duct line. This grip is so designed that it allows large cables of the 3-conductor type to be drawn into ducts by means of the copper conductors. It not only provides a quick and convenient means for drawing in cable but also wastes a minimum amount of the cable.

In the past year the Friedel & Loeff Concessions, known as the Chutes at the Beach, have increased to such proportion that two city blocks bounded by Balboa, Cabrillo, Great Highway and La Playa, are required to contain these joy producing pastimes.

"Pacific Service" plays a most important part in the success of this undertaking, for this reason: It recently became necessary to erect a substation within the Chutes property. 600 K. V. A. in transformers are already installed to take care of this load with provisions in the substation for an additional 600 K. V. A.

Another exemplification of what service means to our Company, and the reason why "service" should be the one thought uppermost in our minds at all times.

"840 Head Street,
Ingleside Terrace,
San Francisco, Cal.,
October 21, 1921.

Pacific Gas & Electric Co.,
San Francisco,
California.

Gentlemen:

I am pleased to take this opportunity of expressing my appreciation of the improved service you are giving to users of electric ranges. Although I have used an electric range for some years, both in this and other cities, it is only now that I am getting complete satisfaction.

The electric range, however good, is no use whatever, unless backed up by dependable service and this is what the Pacific Gas and Electric Company is now providing.

Yours very truly,
CATHERINE WEBSTER."
H. B.

It is interesting to know that the National Ice Cream Company have installed an electric truck. They are the

first in their line to use the electric vehicle in this city, and we venture to predict that after a fair trial, they will have a fleet of them, as the electric truck, like National Ice Cream, once tried means another order.

On October 29th, Howard Dougherty of the Collection Department took as his bride Miss Vivian Gough of the Stub Crew. We all wish them a long happy married life.

This is the second marriage that has taken place between the two departments. Not long ago A. W. Stealey joined hands with Mrs. Ethel Green.

HEAD OFFICE

Herewith another testimonial to "Pacific Service" efficiency:

THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY

210 Post Street.

San Francisco, November 14, 1921.

Mr. John A. Britton, Vice Pres. and Gen'l Mgr.

Pacific Gas & Electric Company,
445 Sutter Street,
San Francisco, California.

Dear Sir:

In preparing for the transmission of the Armistice Day services at Arlington, Va., over our circuits to San Francisco, we were met by most cordial co-operation from your engineering and operating people. In accordance with our requests, conferences were held, tests were conducted, retransposition work was done and a special operating arrangement made effective during the morning of Armistice Day.

In view of the numerous possibilities for trouble, it is a pleasure to record that the transmission was accomplished without any important interferences, and with no interferences at all arising in our territory.

We desire to express our very hearty appreciation of the courtesies extended by your people, which we believe constituted a substantial contribution to the success of the services.

Yours very truly,
(Signed) J. C. NOWELL,
Vice President.
R. R.

*There's Good
in Safe
Investment*

Public Service

THE PRIVILEGE of having electricity, gas, water and telephone service in your home is the GOOD of safe investment. In rapidly growing communities the extension of this essential service to new homes depends upon your investment in utility bonds.

Properly selected, such bonds are safe. They are readily marketable at all times. They pay an attractive income. They are a good investment for your funds. Co-operation with a reputable investment house insures a proper selection of bonds.

We always have a well selected list of attractive utility bonds to offer our clients. Our hydro-electric issues are particularly attractive. Ask for booklet CHS describing them.

BLYTH, WITTER & Co.

MERCHANTS EXCHANGE

SAN FRANCISCO

OAKLAND OFFICE: EASTON BUILDING

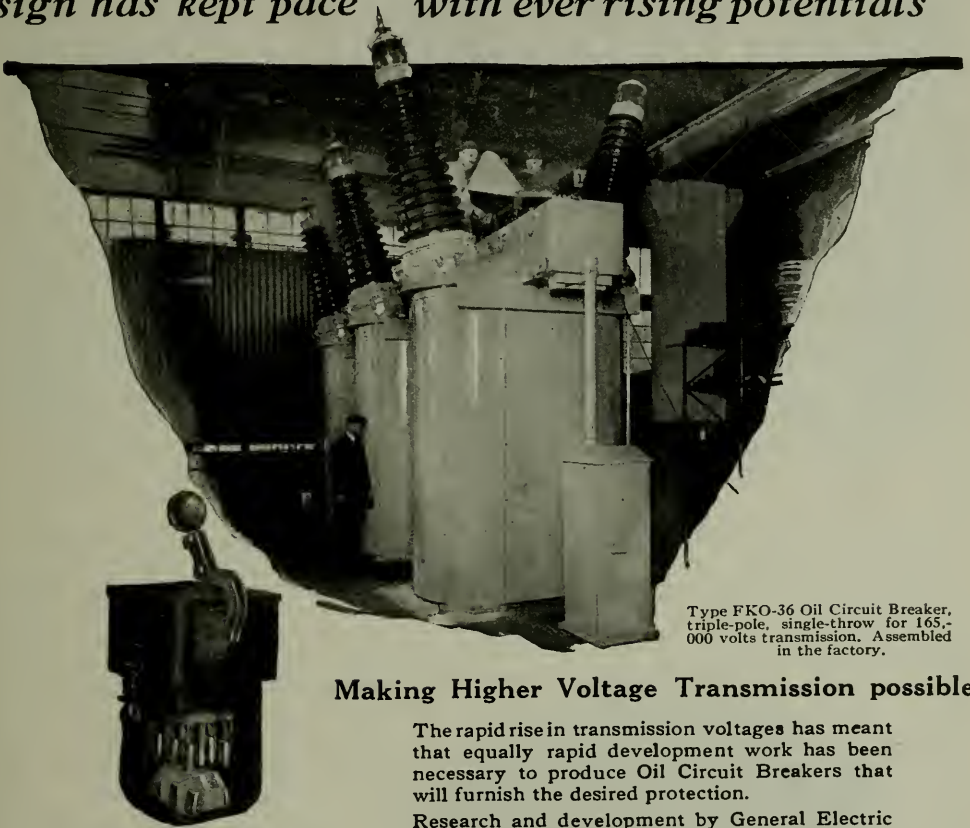
New York

Seattle

Portland

Los Angeles

The possibilities of greater power transmission have been realized because protective apparatus design has kept pace with ever rising potentials



Type FKO-36 Oil Circuit Breaker, triple-pole, single-throw for 165,000 volts transmission. Assembled in the factory.

Type FP-15 Non-Automatic Oil Circuit Breaker T. P. S. T., 600 volts, 50 amperes.

Making Higher Voltage Transmission possible

The rapid rise in transmission voltages has meant that equally rapid development work has been necessary to produce Oil Circuit Breakers that will furnish the desired protection.

Research and development by General Electric Engineers have produced a comprehensive line of Oil Circuit Breakers, covering practically every known requirement. From the small 600-volt, FP-15 type weighing about 12 lbs. used to control induction motors they extend to the giant extremely high voltage type of Oil Circuit Breakers designed for the proposed 220 KV transmission lines. The breaker shown in the illustration is to be placed in operation on a 165 KV system and is the highest voltage breaker so far constructed.

Whatever your requirement there is a G-E Oil Circuit Breaker to fill it.

Consult the G-E Switchboard Specialist in your vicinity.

General Electric

General Office
Schenectady, N.Y. **Company** Sales Offices in
all large cities

54A-35

When writing please mention PACIFIC SERVICE MAGAZINE

J. W. KERR, President

Established 1869

C. D. STEIGER, Secretary

Steiger & Kerr Stove and Foundry Co.

OCCIDENTAL FOUNDRY

Successors to Stelger & Kerr

General Foundry Dept.

Machinery, Railroad, Architectural Castings, Bell and Spigot Castings for Gas and Water Mains, Flange Fittings for all Standard Electroliers, Gasoliers and Lamp Posts

Stove Foundry Dept.

Cast Iron Cooking and Heating
Stoves for Wood or Coal.

Steel Range Dept.

Steel Ranges. Gas Ranges.
For House, Hotel and Apartments.

Corner Folsom and Eighteenth Streets, San Francisco

TELEPHONE MISSION 250

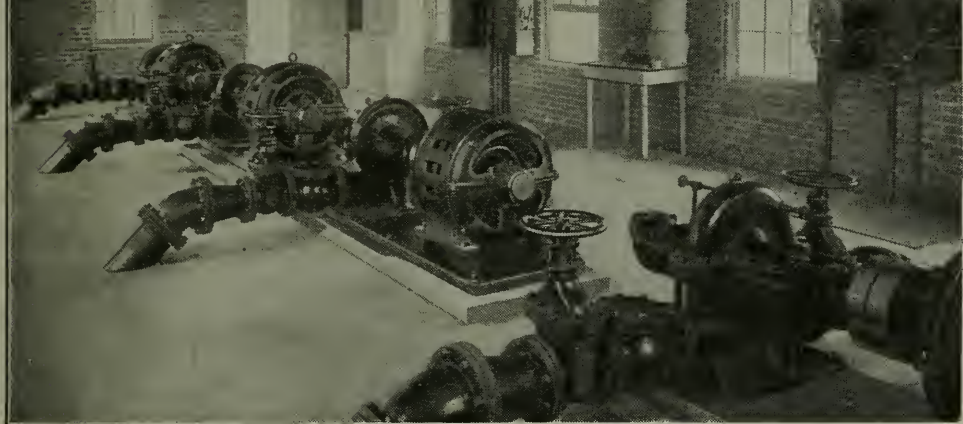


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Gas Holders
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Hydrants, Valves, etc.

CENTRIFUGAL PUMPING UNITS



ALLIS-CHALMERS MANUFACTURING CO.

MILWAUKEE, WISC.

District Office: Rialto Bldg, San Francisco, Calif.

Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

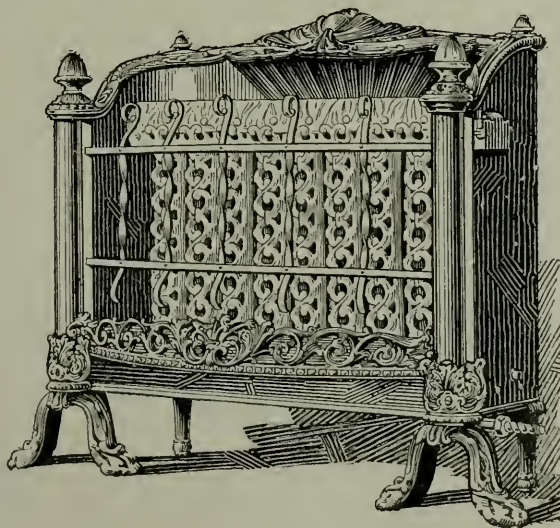
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

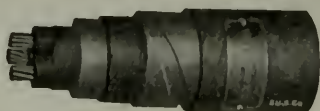
No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California



Three-Conductor, Rubber Insulated Steel Tape Armored Cable.

HAVE you considered the advantages to be secured by installing **STANDARD Steel Tape Armored Cables** underground in a trench without conduits? For certain kinds of service they can be used with great economy as compared with lead covered cables laid in conduits.

Write our nearest office for Bulletin 680

Standard Underground Cable Co.

Pacific Coast Department
San Francisco, Cal.

Seattle

Los Angeles

Salt Lake City

Factory in Oakland, Cal.



The Fulton Gas Pressure Governors For Artificial or Natural Gas

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required. The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

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PITTSBURGH, PA.

What More Could Any Housewife Ask for Than This Combination Gas Range Offers?



336 B, K. in Blue or Gray Enamel Finish, Nickel Trimmed, with Warming Oven

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

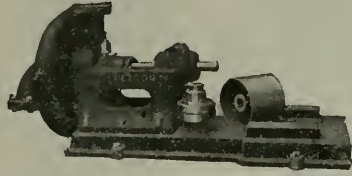
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531 Mission St. San Francisco

FOR IRRIGATION AND GENERAL UTILITY SERVICE

Use a pump suited to motor-drive, even if electric power is not immediately available.

The PELTON Centrifugal Pump shown herewith develops the same high efficiency for either belt or direct motor drive, and but little expense is involved in changing from one to the other.



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STEEL WIRE FENCE WITH SELF-ANCHORING STEEL POST

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Create Economy All Along the Line

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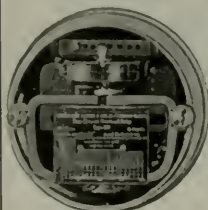
“B” Ironcase
Test

Orifice
Station

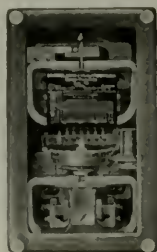
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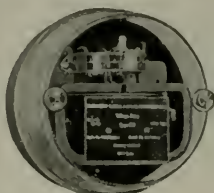
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Type CO Overload Relay



Type CR Reverse Power Relay



Type CV Voltage Relay



Westinghouse Relays

A COMPLETE LINE

Westinghouse Relays are the most accurate and reliable means known to obtain the following results:

Protection of electric-power equipment from short circuits and grounds.

Prevention of interruptions in service and costly shut-downs due to line trouble.

Efficient loading of transmission lines and distribution feeders.

To obtain these results the expense of installing Westinghouse Relays on your system is fully justified.

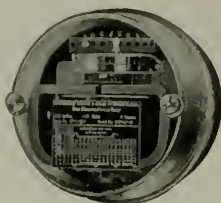
This complete line of Westinghouse Relays is described in detail in the Westinghouse Catalogue of Electrical Supplies on pages 643 to 660 inclusive.

Westinghouse Electric & Manufacturing Co.
NEWARK WORKS, NEWARK, N. J.

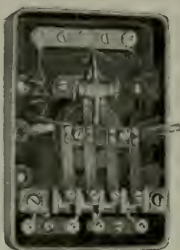
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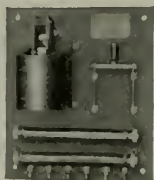
Type CB Overload Relay



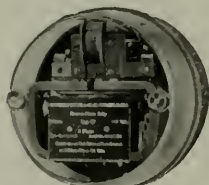
Type CW Power Relay for A.C. Circuits



Type M Multiple-Contact Auxiliary D.C. Relay.



Type R Service Restoring Relay



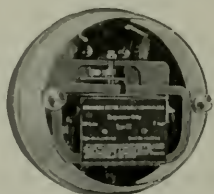
Type CP Reverse-Phase Relay



Type BT Transfer Relay



Type TO Overload Relay D.C.



Type CT Temperature Relay



Cycle counter for measuring time of operation of relays



Type KN Signal and Trip Free Relay



Type D Reverse-current Overload and Temperature Relay, D.C.

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*Invites you to use its fully
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Pacific Gas and Electric Company Furnishes

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TO OVER 592,000 CONSUMERS OF

GAS • ELECTRICITY • WATER • STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

	DIRECTLY		INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity.....	171	1,120,503	60	153,449	231	1,273,952
Gas.....	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic).....	18	61,719	8	15,488	26	77,207
Railway.....	1	65,908	..	..	1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
*Alameda.....	28,806	*El Verano.....	400	*Meridian.....	200	*San Leandro.....	5,703
*Albany.....	2,462	*Emeryville.....	2,390	*Millbrae.....	300	*San Lorenzo.....	500
*Alvarado.....	1,000	*Escalon.....	600	*Mills.....	400	*San Martin.....	250
*Alviso.....	517	*Esparto.....	200	*Mill Valley.....	2,554	*San Mateo.....	5,979
*Amador City.....	377	*Fairfax.....	250	*Milpitas.....	300	*San Pablo.....	500
*Anderson.....	750	*Fairfield.....	1,008	*Mission San Jose.....	500	*San Quentin.....	3,000
*Angel Island.....	1,936	*Fair Oaks.....	300	*Modesto.....	9,241	*San Rafael.....	5,512
*Antioch.....	1,336	*Fall River Mills.....	300	*Mokelumne Hill.....	900	*Santa Clara.....	5,220
*Aptos.....	300	*Farmington.....	300	*Monterey.....	5,479	*Santa Cruz.....	10,917
*Arbuckle.....	900	*Felton.....	300	*Mountain View.....	1,888	*Santa Rosa.....	8,758
*Atherton.....	500	*Folsom.....	2,000	*Morgan Hill.....	646	*Saratoga.....	500
*Auburn.....	2,289	*Forestville.....	250	*Mountain View.....	1,888	*Sausalito.....	2,790
*Barber.....	500	*Frisco.....	45,086	*Mt. Eden.....	200	*Sebastopol.....	1,493
*Belmont.....	375	*Ghiray.....	2,862	*Napa.....	6,757	*Shasta.....	200
*Belvedere.....	616	*Glen Ellen.....	1,000	*Nevada City.....	1,782	*Shellville.....	200
*Benicia.....	2,693	*Gonzales.....	500	*Newark.....	500	*Sheridan.....	250
*Ben Lomond.....	400	*Grass Valley.....	4,006	*Newcastle.....	750	*Smartville.....	300
*Berkeley.....	56,036	*Gridley.....	1,636	*Newman.....	1,251	*Soledad.....	400
*Bollinas.....	683	*Grimes.....	500	*Niles.....	1,000	*Sonoma.....	400
*Brentwood.....	400	*Groveland.....	500	*Novato.....	400	*Sonoma.....	801
*Broderick.....	700	*Guerneville.....	800	*Oakdale.....	1,745	*Sonora.....	1,684
*Burlingame.....	4,107	*Hamilton City.....	250	*Oakland.....	216,261	*South San Francisco.....	4,411
*Byron.....	350	*Hammonton.....	500	*Oakley.....	200	*Standard.....	500
*Campbell.....	600	*Hayward.....	3,487	*Occidental.....	600	*Stanford University.....	2,700
*Capitola.....	300	*Hercules.....	373	*Orland.....	1,582	*Stockton.....	40,296
*Carmel.....	638	*Hillsborough.....	931	*Oroville.....	3,340	*Suisun.....	769
*Cement.....	1,000	*Hollister.....	2,781	*Pacheco.....	300	*Sunol.....	350
*Centerville.....	1,000	*Honcut.....	500	*Pacific Grove.....	2,974	*Sunnyvale.....	1,675
*Ceres.....	637	*Hughson.....	250	*Palo Alto.....	5,900	*Sutter Creek.....	250
*Chico.....	9,339	*Ione.....	1,000	*Paradise.....	694	*Tahama City.....	196
*Colfax.....	573	*Irvington.....	1,000	*Patterson.....	200	*Tiburon.....	400
*College City.....	250	*Jackson.....	1,601	*Penn Grove.....	250	*Tracy.....	2,450
*Collinsville.....	200	*Jamestown.....	750	*Perkins.....	300	*Tres Pinos.....	200
*Colma.....	1,500	*Kennett.....	464	*Petaling.....	6,226	*Tulolumne.....	1,500
*Columbia.....	200	*Kentfield.....	500	*Piedmont.....	4,282	*Turlock.....	3,394
*Colusa.....	1,846	*Kenwood.....	300	*Pike City.....	200	*Vacaville.....	1,254
*Concord.....	912	*Kewick.....	200	*Pinole.....	967	*Vallejo.....	21,107
*Cordelia.....	300	*King City.....	1,048	*Pittsburg.....	4,715	*Vina.....	300
*Corning.....	1,449	*Knights Land.....	200	*Pleasanton.....	991	*Vineburg.....	200
*Corte Madera.....	607	*King.....	400	*Port Costa.....	900	*Walnut Creek.....	538
*Cotati.....	200	*La Grange.....	200	*Red Bluff.....	3,104	*Warm Springs.....	200
*Cottonwood.....	500	*Larkspur.....	612	*Redding.....	2,962	*Waterford.....	250
*Coyote.....	200	*Lathrop.....	600	*Redwood City.....	4,020	*Watsonville.....	5,013
*Crockett.....	1,500	*Lewiston.....	200	*Richmond.....	16,843	*Wheatland.....	435
*Crow's Landing.....	300	*Lincoln.....	1,325	*Rio Vista.....	1,104	*Williams.....	650
*Daly City.....	3,779	*Live Stock.....	300	*Ripon.....	500	*Willows.....	2,190
*Danville.....	400	*Livermore.....	1,916	*Riverbank.....	200	*Winters.....	903
*Davenport.....	300	*Loma Park.....	600	*Rodeo.....	300	*Woodland.....	4,147
*Davis.....	939	*Loomis.....	500	*Roseville.....	4,477	*Woodside.....	300
*Decoto.....	300	*Los Altos.....	500	*Ross.....	727	*Yolo.....	350
*Del Monte.....	300	*Los Gatos.....	2,317	*Sacramento.....	65,908	*Yuba City.....	1,708
*Denair.....	200	*Los Molinos.....	200	*Salinas.....	4,308		
*Dixon.....	926	*Madison.....	300	*San Andreas.....	1,183		
*Drytown.....	200	*Manteca.....	1,286	*San Anselmo.....	2,475		
*Duncan's Mills.....	200	*Mare Island.....	600	*San Bruno.....	1,562		
*Durham.....	250	*Martinez.....	3,858	*San Francisco.....	506,676		
*Dutch Flat.....	750	*Marysville.....	5,461	*San Jose.....	39,642		
*Eldridge.....	200	*Maxwell.....	500	*San Juan.....	350		
*El Cerrito.....	1,505	*Mayfield.....	1,127				
*Elmira.....	350	*Menlo Park.....	900				

Unmarked—Electricity only.	—Gas, Electricity and Water.	—Electricity supplied through other companies.
—Gas only.	—Gas, Elect. and St. Railways.	—Gas supplied through other companies.
—Gas and Electricity.	—Electricity and Water.	—Water supplied through other companies.

"PACIFIC SERVICE FACTS"

208,295 poles are used in the overhead electric distribution system. These have a total length of 1,460 miles, the distance between San Francisco and Denver. This number of poles with the cross arms, contain approximately 60 million board feet of lumber sufficient to build 4,000 five room cottages.

Operates 28 Hydro-Electric Power Plants.

Operates 4 Steam-Electric Plants.

Operates 20 Gas Plants.



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WHY otherwise intelligent people will accept anonymous say-sos on investments is difficult to explain.

In considering investment purchases clear-cut information is the essential need—a need that can readily be met by any of our 50 offices.

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PACIFIC SERVICE MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



ON CRAGS AND PEAKS, POWER IS STORED

VOL.
12

DECEMBER 1921

No
7

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Red Bluff

Pacific Service Magazine

Volume XIII



Number 7

Yearly Subscription \$1.50 ~ Single Copies, Each 15 Cents

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Pit River No. 1 power house, now in course of construction, as it will appear when completed. From a drawing by our company's architect.

PACIFIC SERVICE MAGAZINE

Volume XIII

DECEMBER, 1921

Number 7

Sacrifice and Service



The realization of a hope brings joy unbounded, but the achievement of a duty brings a satisfaction not measured by joy. It affords a consolation of mind, an expanse of heart which converts the soul and mind to an appreciation of what sacrifice and service mean.

It thrills, it destroys pessimism, it builds up optimism, it cheers and invigorates, it stimulates and strengthens purposes and ideals, and in the doing it serves to gird the breastplate of endeavor stronger over the heart and lead on in perseverance to that which makes for the betterment of self and others.

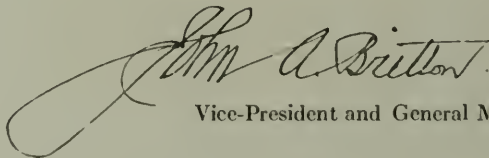
The past year has developed such a spirit of sacrifice and service in our ranks; it radiates from every side, and it spells success for the year to come.

Onward let us go to the tasks awaiting us, with heartfelt determination to outrun the distance accomplished in Nineteen Twenty-one, as well as to meet and greet each other and our work with smiles and determination.

Let us carry to our companions and those we serve the same spirit of sacrifice and service as did the lowly Nazarene, centuries ago, when he proclaimed "On Earth Peace, Good Will Toward Men," and let us make "Pacific Service" prove that the world is a good world, that Faith, Hope and Charity abound among us.

Let us agree to spread the gospel of Sacrifice and Service, to the end that in the coming year we will realize that which for your efforts in the past year I now cordially and lovingly wish you all—

"A Merry Christmas and Happy New Year."

A handwritten signature in cursive script, reading "John A. Britton". The signature is fluid and elegant, with a large, sweeping initial "J".

Vice-President and General Manager

San Francisco,
Christmas, 1921

In the Beginnings of "Pacific Service"

Early Stages of Hydro-Electric Development in North-Central California

By JOHN MARTIN

Readers of PACIFIC SERVICE MAGAZINE are generally aware of the part played by Mr. John Martin and his associates in the development of this section of California through the medium of hydro-electric power. The entire State, in fact, owes a debt of gratitude to those men whose far-sightedness and enterprise were largely responsible for the wealth of electric energy that today is placed at the disposal of the agricultural, industrial and other industries that are the backbone of California's prosperity.

Mr. Martin culls his reminiscences from the storehouse of an unusually retentive memory. He tells his own story in his own way, simply and unaffectedly, as he remembers the events related therein. We venture to think the narrative will prove of exceptional interest not only to those of us who have known Mr. Martin and admired his energy and resourcefulness, but to all our readers who are interested in the today, all-engrossing subject of electric power.—EDITOR PACIFIC SERVICE MAGAZINE.

The story of hydro-electric development in California begins with the Folsom plant. This project was started by Albert Gallatin, who was the manager of Huntington, Hopkins & Company, of Sacramento, and Horatio P. Livermore, who was an associate of Gallatin's in the Sacramento Gas & Electric Company. These two men made a contract with the State of California for the building of the Folsom Canal, with the object in view of supplying power to the prison at that point. The canal was to be built by prison labor and the water was to be used for power purposes at the prison, and then the power was to be conducted to Sacramento, a distance of twenty-two miles, after its generation at the Folsom plant under a 55-foot head. The transmission plant was finally completed, and service was rendered over the line from Folsom in the city of Sacramento approximately September 1, 1895.

It was some time prior to the 1st of November, 1894, that I was invited to luncheon by my friend, Mr. C. W.



John Martin

Randall, of Wakelee & Company, druggists, of San Francisco. I recall that I was half an hour late to the luncheon, owing to the arrival of my fifth child, which delayed matters somewhat. It was there that I met for the first time Mr. Eugene J. de Sabla, Jr., introduced to me by my friend Charley Randall.

Shortly prior to this date a personal friend of mine, Mr. F. H. E. O'Donnell, who was—and is yet—a teacher in the Deaf and Dumb Institute, at Berkeley, called on me and requested that I give employment or find

employment for an acquaintance of his, a one-armed man, purporting to be an electrician, by the name of Charles C. Lindner. Mr. Lindner called at my office and showed me a letter from the Stanley Electric Manufacturing Company, of Pittsburg, stating that they would allow him a commission upon any electric machinery which he should sell. I found upon investigation, however, that similar letters were extant, from various other

people in San Francisco, and that no agency was implied by the letter.

Contemplating a trip to the East, I suggested to Mr. Lindner that he locate himself in my office, and I would aid him to the extent of sustaining his family and himself, and on my trip east I would try to secure the exclusive agency of the Stanley Company, which manufactured alternating current generating apparatus and transformers. On the last day of December, 1894, I started on a visit to the East, accompanied by my wife. I went to the Stanley Electric Manufacturing Company's place at Pittsburg on January 5, 1895, and made an arrangement with them for an exclusive selling agency for their apparatus on the Pacific Coast, on a basis of my paying all my expenses of selling, they to give me definite net prices for their apparatus, and I to make what profit I could from the sales.

At the luncheon with Mr. de Sabla, I was informed by him that he contemplated the financing of an electric plant on the South Yuba River, some five or six miles above Nevada City, to supply electric power to the mines of Grass Valley and Nevada City, and, also, to the municipalities themselves. His immediate associate in this matter was Mr. Alfred Tregidgo, a Cornishman, who had been in the employ of Mr. de Sabla as superintendent of a mine in that district prior to that time. Mr. Tregidgo conceived the idea of supplying electric power to these mines and municipalities from reading an account of the transmission of electric power from Tripoli to Rome, in Italy.

Water, supplied by the ditches of the various corporations and private companies, had been used for mining purposes, and also for hydraulic mining, for many

years preceding, but the legislation restricting the use of water for hydraulic mining purposes, because of the devastation of the valleys by the debris being conveyed through the streams, caused the cessation of that method of mining as early as 1888, although many of the mines were supplied with water for all purposes for operating their hoists and stamp mills in Amador and Nevada Counties, and other counties as well.

Upon my return from the East I assisted Mr. de Sabla in financing the installation of the first unit of the South Yuba River, under the name of the Nevada County Electric Power Company. That unit consisted of two 375-kilo-watt alternating current, two-phase

generators, wound initially for 5,500 volts. It was only possible to generate this by the use of Stanley generators, which were the first stationary armature generators manufactured commercially.

I was compelled in time to disassociate myself from Mr.

Lindner, and, awakening to the fact that I had entered into a contract for the building of this plant and had no technical knowledge whatever in regard to it, I immediately communicated with the Stanley Company, requesting that they send out at once to me an electrical engineer, competent to educate me and also to have charge of the erection of the plant. In consequence of that request, they sent Mr. Edgar E. Stark, who arrived some four months before the time necessary for the erection of the plant.

Mr. Stark was well versed in his profession and had the happy faculty of being able to explain the intricacies of electric generation, transmission, and distribution to a novice in such a satisfactory way as to have given me, during the four



The pioneer Folsom Power House.

months of his intensive training and education, a comparatively intelligent knowledge, not only of the construction of the apparatus, but also the theoretical and practical operation of it. At that time there was no literature on the subject of long distance transmission, all the information being wrapped up primarily in the minds of engineers and in the archives of the companies manufacturing the apparatus and their engineering staffs.

This installation was made by means of a flume, approximately three and a half miles in length, and a diverting dam, on the South Yuba River at a point approximately two miles above Purden's Bridge, being the crossing of the South Yuba branch in the road between Nevada City and Camptonville. This flume was five feet wide and four feet high, and conveyed approximately 5,000 miner's inches of water. The water was discharged from the end of the flume through a penstock of riveted steel, the water being applied at the lower end of the pipe line to tangential wheels of the Pelton type, directly connected to the two generators. A pole line was built to Grass Valley and Nevada City and the various mines in that district, and the supply of power was started in the month of May, 1896. This plant gave satisfactory service for all demands up to its capacity.

During this period I was associated with Mr. Charles Webb Howard, then president of the Spring Valley Water Company, in the operation of a gold mine at Brown's Valley, California, situated approximately twelve miles north of Marysville. This mine was supplied with water for steam and milling purposes by the Brown's Valley Irrigation District, a municipal corporation, incorporated under the Wright Irrigation Act of California. About this time a decision was rendered by United States Circuit Judge Ross, declaring the Wright Irriga-

tion Act to be unconstitutional, in consequence of which the various irrigation districts had not power to levy taxes for the maintenance of their properties. The mine which Howard and myself were operating was largely dependent upon the irrigation district for water for operating purposes and, as well, was using wood for fuel for steam to generate the necessary power; and so we were interested in finding some way to keep the district alive.

At the time of its incorporation the attorney for the entire district had succeeded in having passed a law permitting irrigation districts to lease the use of their water for mechanical purposes, if, by and when it could be so used without interruption of flow for irrigation purposes. In the building of this plant it had been found necessary, in conveying the water from the higher level to the valley to be irrigated, to install an inverted siphon across Dry Creek, about seven miles northeast of Brown's Valley, and at this place it was possible to use the water for mechanical purposes in accordance with the act which had been adopted. Mr. Howard and myself, through the agency of our manager, were granted the right to use the water for mechanical purposes, assuming the burden of the maintenance and operation of the entire plant, up to and including the inverted siphon, from its headwaters, and paying the district the sum of \$100 per year. This contract was to extend for fifty years.

In 1897, I disposed of my holdings in the mine and acquired the contract with



The old Rome Power House, on the South Yuba near Nevada City.



The diversion dam eight miles above Colgate Power House.

pleasure and satisfaction to assist in the development of the country than could be gained from the financial gain resulting therefrom. In other words, he said he enjoyed trying to make two blades of grass grow where only one grew before.

The winter of 1897-98 showed the lowest rainfall known in California for fifty years. In the summer of 1898 the water in all the streams

the Brown's Valley Irrigation District, with a view of making an installation at or near the point of diversion at the inverted siphon, in order to utilize that head. This resulted in the association with me of Mr. R. R. Colgate, of New York, with whom I had become acquainted shortly before through his having acquired a stock interest in the Nevada County Electric Power Company. The power house on the South Yuba River was called "Rome" power house in his honor, his first name being Romulus.

Mr. Colgate and myself furnished all funds necessary for the building of this first power plant above Brown's Valley, approximately eighteen miles from Marysville, where construction work was started on the 15th of November, 1897. It was completed on the 21st day of March, 1898, at which time current was supplied into the town of Marysville and the Buckeye Flour Mill in Marysville, as well as furnishing power to the mines of Brown's Valley.

Speaking of the first Yuba project, Mr. Colgate made a visit to me while I was constructing this plant, and, in driving from Marysville to the power house, he was discussing affairs in general, and this project in particular, and I recall his saying to me that it gave him more

became so low that, at Folsom Power House which normally had more than sufficient water to generate 4,000 horsepower, they were only able to produce 250 horsepower. There was at this time a flow of water over the dam on the North Yuba River in excess of the amount of water required for the district, amounting to 300 second-feet, or, as it is known in mining parlance, 12,000 miner's inches. This water could be used by diversion at the end of a flume approximately 7.6 miles below the dam, under a head of 700 feet. Negotiations with the Sacramento Electric, Gas and Railway Company resulted in a contract being entered into with that concern to supply them with 3,000 horsepower. This was on the 25th of March, 1899, and power was guaranteed to the extent of 1,000 horsepower to be delivered in Sacramento on September 1st of that year. In order to do this, it was necessary to enlarge the original flume, or, rather, to build a new flume immediately over the existing flume. This was done, the flume being seven feet wide and six feet in height, and when it was completed the superstructure was sufficiently strong to maintain the weight of a railroad train.

The first portion of this new power house equipment, containing five units of 1,200 horsepower capacity each, was

installed during the summer and winter of 1899-1900. A pole line sixty miles in length was built from the power house to Sacramento. This pole line was completed on the 4th day of September, 1899, and power was transmitted to Sacramento the day following. And, the amount of power supplied to Sacramento and, also, used in Yuba County was not sufficient to utilize all of the available power from the net flow of the North Yuba River. This power house was named in honor of my associate as the "Colgate Power House."

The voltage of the Folsom plant was 11,000, whereas the voltage over the wires in the Brown's Valley plant to Marysville was 16,700, the highest voltage in operation at that time. In the meantime, Dr. Van Norden, of the Central California Company, had installed two hydro-electric plants taking water from irrigation ditches leading from Lake Spaulding, one at Auburn and one at Newcastle, from which the line to Sacramento was operated at 15,000 volts. In addition to those two plants at Auburn and Newcastle they had a small plant at Alta. Dr. Van Norden had started

and eleven days from the time we started with pick and shovel until I had my pole line into Sacramento.

In the construction of the flume for Colgate, which I have said was seven feet wide, six feet in height, and 7.6 miles long, it was necessary for us to install a sawmill to cut lumber for this flume. This sawmill was built on land situated approximately eight miles northwest from Camptonville, on what was known as Slate Range, where a fine belt of timber was

purchased, from which all the lumber for the flume was cut. And all of the lumber used in building the flume, except sway bracing and the caps, was heart lumber, and every footing of the superstructure was made on solid rock or placed upon cedar blocks; and in places, where the superstructure supporting the flume was of different lengths, owing to the steep sidehill of the canyon, anchorages were made with steel rods sulphured into the bedrock.

The construction of this flume immediately over the existing flume, which was four feet by four feet, necessitated the raising of the face of the dam, in order to

allow the water to flow into the new flume under construction. The old flume was used for transportation purposes of the lumber necessary for the construction of the new flume. The new flume was done in sections, and as it was carried forward in construction the old flume was entirely removed from under the superstructure, so as to remove any possibility of fire from the old material.



Tramway and bridge for lowering flume timbers down the bluff and across the Yuba River.

to put in his plant about a year after the Folsom plant was finished and before I built the Brown's Valley plant. It was about 1897 that they got their power into Sacramento. By the way, Dr. Van Norden had said that we could not build a road down the canyon to Colgate where we proposed building it, much less put a plant in there. But I not only put the plant in there but built it in five months

The fact that we were able to generate more power than was required for use in Sacramento and the districts then supplied in Nevada and Yuba Counties invited the attention of the banking firms of E. H. Rollins & Sons, of New York, San Francisco and Denver, and N. W. Harris & Company, of Chicago and New York. These two firms were at that time interested in financing the Oakland Traction property, and were desirous of obtaining cheaper power for its operation. As a result, in the fall of 1899 their engineers visited the properties of the Nevada County Electric Power Company and the Yuba Electric Power Company, in order to determine our ability to furnish them with additional power. Their report being satisfactory, we at their suggestion consolidated the interests of the Nevada County Power Company and the Yuba Electric Power Company under the corporate name of the Bay Counties Power Company, which was done on the 1st of June, 1900. On September 1st of that year, a mortgage of \$2,250,000 was authorized and bonds issued. It was known then to the financial people already referred to that it would require approximately \$3,000,000 to complete the construction to Oakland contemplated in their financing, as well as to acquire the Yuba Electric Power Company and the Nevada County Electric Power Company, and it was understood and agreed and carried out that a second mortgage for \$750,000 should be issued for that purpose.

In building the transmission line to Oakland, under that project, it was necessary to cross the narrows between San Francisco Bay and San Pablo Bay at Dillon's Point with an aerial transmission supported upon steel towers. This transmission line at that time was the longest span ever constructed, being 4,427 feet in length between the two towers, and from anchorage to anchorage 6,292 feet. Three wires were necessary, with a fourth one put up for a spare. That wire was made of plow steel cable, of 98,000 pounds tensile strength, double galvanized and seven-eighths of an inch in diameter,

and was anchored in bedrock on both north and south sides by means of oil insulators. Since this original installation two additional cables have been erected on the same towers, for the purpose of completing new circuits across the strait. *It is interesting to note that during an operation of twenty years there has never been one single interruption in the use of this aerial crossing.*

This power line was completed in the middle of 1901 and supplied power to the Oakland Traction Company and, also, to the Oakland Gas, Light & Heat Company, for the Standard Electric Company, with which company the former concern had made a contract for power from the Mokelumne River to Oakland.

This transmission line was designed and constructed for 60,000 volts, *which was at that time the highest voltage of any commercial transmission line in the United States, and was the forerunner of all future high tension development.*

It may be interesting to know how this was made possible. Mr. W. H. Crocker, in connection with his brother-in-law, Prince Andre Poniatowski, acquired the properties of the Blue Lakes Water Company, in Amador County, and started the construction of power development on the Mokelumne River to Oakland and San Francisco, a distance of 112 miles. At that time the maximum voltage which the large electric companies, the General Electric and the Westinghouse Electric,



Pretty tough country along the line of the flume.

guaranteed was 30,000 for the General Electric and 25,000 for the Westinghouse. As the representative of the Stanley Electric Manufacturing Company I made a guarantee to those gentlemen to transmit the current safely at 60,000 volts. The financial difference between the lower and higher rates would be measured in dollars in about this way: The original installation was a 10,000-kilowatt transmission, and in transmitting that amount of energy, for a distance of 112 miles, with a maximum line loss of 10 per cent, the cost of the copper line for transmission purposes would approximate \$1,200,000 at 30,000 volts. By the use of 60,000 volts, with the same line loss, a copper transmission line would cost \$300,000, with a slightly additional cost in pole line construction, due to the increased cost of the insulators and a slight difference in the cost of transformers. Those two latter items were relatively insignificant in the total cost of installation.

As a result, the Stanley Company received a contract for this installation, and did install five 2,000-kilowatt Stanley generators. Those machines were operated by water under pressure of 1,200 and 1,400 feet head.

This company was known as the Standard Electric Company of California, the ownership of which was acquired by the Bay Counties Power Company in the year 1904. During the period of transition from low to relatively high voltage transmission many of the bugbears and bugaboos in the electrical profession were propounded, such as lagging and leading current, hysteresis, harmonics, and surging. They were

very bewildering, but in actual operation those bugaboos disappeared entirely.

The question of lightning was a very serious one, but it became evident to the practical operator and builder that the use of the ordinary Dutch lightning arrester, consisting simply of a pair of wires and properly grounded in proximity to the pressure line, would accomplish all that could be desired in the way of protection against lightning. Coupled with that was the fact that if lightning did strike directly upon the power lines, the greatest damage it would involve would be the destruction of some of the transformers, spare units of which could be carried as a measure of supply in your sub-station, and so the enormous cost of the spark-gap lightning arrester installation was entirely avoided.

The increased demand for the use of electric current for power in the territory supplied by the Bay Counties Company necessitated additional power development. This was made possible through the formation of a corporation known as the Valley Counties Power Company, all of the stock of which was owned by

the Bay Counties Power Company save a few shares for directors' purposes, and the principal and interest of the bonds of the Valley Counties Company were guaranteed by the Bay Counties Power Company.

The territory in which the Valley Counties hydraulic development was made was on Butte Creek, in Butte County, and its tributaries. The Valley Counties issued bonds, authorized on May 1, 1902, for \$2,500,000, which was expended during the succeeding two years in increasing the generating and distrib-



Jays of engineering. An abrupt corner on Colgate flume.

uting capacity of the electric power transmission development of the Bay Counties Power Company.

In 1902 the Valley Counties Power Company purchased from the estate of Otto W. Meysenburg the entire capital stock of the Butte County Electric Power

& Lighting Company, which had a power development on Butte Creek, near Center-ville, with a transmission line to Chico and Colusa. In connection with that, Meysenburg came to the office one day and said to me, "Mr. Martin, I want to sell the Butte Creek Power Company to your company, and there is \$25,000 in it for you. I want \$250,000 for it, but as a condition precedent, you must buy the distributing electric plant in Chico and also buy the gas plant" for which he held an option. I repeated this conversation to my directors and reported the \$25,000 as well as the rest of it. Meysenburg came to us, and we had a meeting and bought his property. De Sabla and Colgate and Meysenburg and myself and others interested had lunch at the Bohemian Club one day, and after lunch we talked it over. Then we walked down, and Meysenburg rushed up to me and he said, "Mr. Martin, I want to shake your hand." Well, Meysenburg died before the matter was consummated, and the executor refused to carry out the arrangements, so the upshot of it all was that we eventually bought the property from the executor for \$175,000. *Right there let me say that in the acquisition of any of the properties finally becoming part of the Pacific Gas & Electric Corporation, neither of my associates nor myself have received one cent of compensation or bonus of any kind.*

In the same year the Valley Counties Power Company purchased from the Cherokee Mining Company the entire ditch system on Butte Creek, by the use



Laying the penstocks above Colgate Power House.

of which the power plant at de Sabla was supplied. The first installation was 1,500 kilowatts, which power was transferred to the lines of the Bay Counties Power Company. This was afterwards enlarged to 6,400 kilowatts. The de Sabla plant on Butte Creek was finally in-

stalled to a capacity of 13,000 kilowatts.

On the 1st of March, 1903, there was a consolidation effected of the Bay Counties Power Company, the Valley Counties Power Company, the Oakland Gas, Light & Heat Company, operating in Oakland, Alameda, Berkeley and surrounding territories, the Sacramento Electric, Gas & Railway Company, operating in Sacramento County and the city of Sacramento, and furnishing gas and electricity and as well electric traction power in Sacramento County, the California Central Gas & Electric Company, consisting of central gas plants and electric lighting and power distribution in the cities of Chico, Marysville, Colusa, Woodland, Grass Valley, Nevada City, Napa, Santa Rosa, Petaluma, and San Rafael, and the surrounding territory. The new consolidation was known as the California Gas & Electric Corporation.

Our entry into Oakland was accomplished under these circumstances: When the proposition was made to us as to the Butte Creek plants, the then president said to Mr. Colgate, "It is necessary for you to protect the interests of our employees in the distribution at Chico, and also exercise the option for the purchase of the gas plant." "But," said Colgate, "I can't do that, but Mr. Martin will probably buy it from you, because he is going into the retail business"—I had already acquired Marysville from Colgate and the Knight estate. When we installed in Marysville, there was the steam plant and, also, a gas plant in

that city. We saw Mr. Knight, who owned it or controlled it, and he offered to sell it to us at a compromise valuation, if we would get together. After his death, they were running behind about \$800 a month, and Mr. Bingham manager of the bank in Marysville, came to us and said, "I want to sell you our plant. Colgate says you are going out of the retail business; let us both sell."

The result was that they each put a valuation upon their plant, and I bought the Yuba Power Company's gas and electric distributing plant in Marysville and, also, the opposition's plant. I also took the Chico plant over, protecting the employes, and also exercised the option mentioned. I had as a manager in Marysville a man named M. L. Osborn, and I said to him, "Osborn, go up and look at that plant." He said, "Mr. Martin, if I throw out that bad gas plant, don't blame me." I said, "Before we do that, just look at it." There was installed in Marysville a water gas plant, using hard anthracite coal and oil, but we went out and examined this plant and saw that it was using 18 gallons of oil whereas it should be using 13 or 14, yet it was making gas in the holder for half of our cost. I said to Osborn, "We won't throw it out, but we will improve it." And I made arrangements with Mr. Leon P. Lowe, for the installation of his process there, and then I put in a plant of Lowe's at Marysville.

Mr. Britton was to have become associated with me in the California Central two and a half years before we bought the Oakland Company, but they induced him to stay with them. Well, I took him up to Marysville and showed him that plant in operation. He had had a sort of a grudge against it. I said to him after he had looked it over, "What do you think about it?" and he replied, "I wish we had a plant like this large enough for us in Oakland."

When we conceived the idea of the California Gas & Electric Co., I went to the directors of the Oakland Gas Light & Heat Company and

told them I had my arrangements with Lowe for the oil gas process. The Oakland Light & Heat Company had been paying monthly dividends for thirty-three years, without interruption, of twenty-five cents per share; the number of shares of their stock was thirty thousand, and the price per share of the stock was \$50. They had only issued during that period \$1,000,000 in bonds. All the money that they had made in excess of dividends they had spent in development and betterments. By this process of Lowe's, we were able, if we had the plant in Oakland, to manufacture gas in the holder at less than half of what it was costing the Oakland Gas, Light & Heat Company at that time to make gas. So I made this proposition to the directors of the Company.

"We want an option of purchase on your property for eighteen months"—this was on the 1st of September, 1902. "We want to pay you \$70 a share for that stock. You are of course to pay your dividend of twenty-five cents a share during the period that the property is held under option, and any earned increments that you have made or anything that you have spent for betterments during the period of the option shall be paid to you in addition to the \$70 a share. Furthermore, we will build a gas generating plant on your property, of capacity sufficient to supply your wants, and, when completed, sell you the gas we produce there at fifty per cent of the cost of your gas in the holder. And if we default in acquiring your property in eighteen



Four miles of Colgate flume along Yuba river.

months, the plant that we build on your property is yours. On the other hand, if you stockholders want to join with us in our incorporation, you will be afforded the same facilities as everybody else."

They gave us the option, and in six months we acquired the property and paid them for the property on the 1st of March, 1903, when we made this consolidation of the C. G. & E., and we paid them then not only the \$70 a share and the \$1.50 a share that they had in dividends but \$170,000 besides that we put into property during that six months, out of earnings. So, you see, they received \$45,000 in dividends during the period, and received \$170,000 for betterments, in addition to the \$70 per share for the stock. In other words, they made a profit of at least \$215,000 in six months over and above their bond interest, or at the rate of \$430,000 per annum. On the basis of stock at \$70 a share for 30,000 shares, or \$2,100,000, it would be equal to 20½ per cent, which was more earnings than could be made out of a given amount of money in that line. All this showed that the actual values were in excess of the par value of the stock.

Well, we put that into the new company at exactly \$70 a share. We didn't charge a bonus, or anything else, though the book value of the property was more than the \$70 a share. Anyway, they made a profit by going with us, and they obtained 40 per cent more than they ever expected.

At Sacramento they were very strong. We had made a contract for power at a very low rate. The control was held by Albert Gallatin, Charles R. Lloyd, and the L. P. Drexler Estate. McCallum, now dead, was Drexler's brother-in-law and was one of the executors of his will. Those three men never pulled together. We wanted to get the ownership of that company for the reason that the contract we made with them, while it was profitable to us, was more desirable as a proposition of ownership, and they had never made a success of their property up to that particular time, although they were then paying fifteen cents per share a year in dividends on their stock, and there were less than 19,000 shares of stock outstanding. They should not have paid those dividends; they needed the money for betterments; however, they were doing

so. On a 6 per cent basis, the valuation of that stock would be placed at \$30 a share. By way of parentheses, I want to say that the company had gone through a refinancing before, because they were financially unsuccessful, and the General Electric put through another scheme after the money was put in there and a part of it lost.

Well, I got those three men in my office. I made an appointment with each one for the same hour, without the knowledge on his part that the other two were coming. Then I said to them, "Gentlemen, I want an option to buy the stock of your company, and I want it upon this basis: In the first place, you are paying 15 cents a share a month, which is equivalent to \$30 on a 6 per cent basis, and I am willing to take an option to pay you \$40 a share, on the following basis: I will pay you a dollar a share down, I will pay you \$3 in sixty days, \$6 in six months, \$10 in a year, and \$20 in two years. In the meantime, you pay dividends to yourself as you have, and if I fail in any of the payments all that I have paid shall be forfeited to you as liquidated damages and your stock returned."

They saw that they were getting a square deal, and they all signed up. I said to them, too, "Furthermore, every certificate holder will get exactly the same for his stock, no difference between the large and the small holders." The result was that we purchased the stock six months thereafter, and we found that it earned \$500,000 profit over and above its bond interest and sinking fund, within one year after its purchase, showing what kind of a purchase that was.

In 1904 the California Gas & Electric Company corporation acquired the Standard Electric Company with its Electra power plant on the Mokelumne, of a generating capacity of 10,000 kilowatts, which capacity was enlarged in the same year to 20,000 kilowatts. [By the way, this was done for an additional cost of less than a million dollars.] The transmission line of the Standard Company came from the Mokelumne River by way of Stockton to San Francisco, and in addition to that a branch line from Mission San Jose and to Oakland over a portion of the Southern Pacific right of way from Niles to San Jose.

The C. G. & E. also purchased the property of the United Gas & Electric Company in and around the city of San Jose in that year. It acquired, too, the property on the Peninsula from San Jose to San Francisco, including Menlo Park, San Mateo, Redwood, etc.

In the same year, 1904, we acquired the South Yuba Water Company. With the South Yuba Company was also the Central California Electric Company, with plants at Newcastle, Auburn, Alta, which were the Van Norden plants previously referred to in my story. And with the South Yuba water, irrigation and power development were available in Nevada, Yuba, and Sacramento Counties, the Central California's property covering that territory. The South Yuba water system had existed since the early hydraulic mining days, and consisted of an enormous cluster of lakes and flumes and ditches, which, as long as the hydraulic mining industry in California was at its height were used for hydraulic

mining, but since its abandonment had been used principally for irrigation and, also, for the generation of electricity for their small power houses. But it was deemed possible to make a higher use of them, and it may really be stated that from the date of the acquisition of the South Yuba water system there came about the realization of a dream which had its result in the Lake Spaulding dam and what is known now as the South Yuba-Bear River development, with its enormous power plants at Lake Spaulding, Drum, Halsey, and Wise. Those are of recent date, and their story is well known to your readers.

On January 1, 1906, the California Gas & Electric Corporation reached across the bay of San Francisco and, with its acquisition of the San Francisco Gas & Electric Company, became the big merger recognized by the name of the Pacific Gas & Electric Company, and whose trademark is "Pacific Service."

(To Be Concluded)



"Pacific Service" at the California Industries Exposition

Our company was represented in a dual capacity at the Industrial Exposition held in San Francisco November 19th to December 10th, inclusive, at the famous Exposition Auditorium.

Our electrical display was made in conjunction with the Pacific Coast Steel Company, the two companies dividing the space, and the Steel Company furnishing one of its 54-foot 220,000-volt snow type steel towers, such as are used on the new Pit River line. This tower was fitted with insulators such as will be used on the new line, and on the top was a large sign designating its intended use.

In the base of the tower was built a small booth representing an electrical kitchen. Around the outside were placed a number of small trees, the idea being to indicate that the tower was standing in a forest. On either side of the entrance the Pacific Coast Steel Company displayed samples of its products, and in the interior of the kitchen were shown the latest types of electric cooking apparatus, consisting of an electric range, electric automatic water heater, a couple of air heaters, and electric refrigerating machine, together with small appliances. These were all shown in operation, and attracted a great deal of attention.

In order to attract particular attention to the tower a spark gap was placed between two of the insulators, and large spark coil was used to cause the current to jump across the gap, which made considerable noise and always attracted attention to the tower.

The display on the whole was considered a complete success, and was probably visited by at least 20,000 people. The men in charge secured a great many prospects for electric cooking and heating, and made some sales.

The industrial gas display was made in a separate booth, and here every type of heating device for office building or home was displayed to the entire satisfaction of a daily throng of visitors. When planning for this booth it was

decided that the construction should be such that any number of persons could view an appliance without interfering with the view of the other appliances demonstrated. This was made possible by a structure of the mission plan of architecture, occupying a twenty by twenty foot space, with tile roof and aisles on all four sides. A semi-indirect lighting system was followed out with the use of four Welsbach fixtures with "See-easy" mantels. The entire lighting fixtures were furnished by the Welsbach Company.

Three Radiantfires were installed with the co-operation of C. B. Babcock and Company, who furnished this type of heaters for display, one of them installed



Our electric display included a 220,000 volt steel transmission tower such as will be used to carry electric energy from the Pit River to the Bay of San Francisco.

in a most artistic fireplace contributed by the E. H. Richardson Company. Other display features included a Hall basement furnace, a floor furnace of the Hall type, displays of the Rector heating system, Bryant gas fired boilers, Kane high pressure boilers, bake-oven burners and candy furnaces.

Members of the Industrial and House-heating department of "Pacific Service" were detailed to attend to the booth and the crews worked in two shifts during every day of the Exposition. It is worthy of note that during the three weeks in which the Exposition was held this department of "Pacific Service" secured a total of 148 prospects, of which 37 were from out of town. The following statement appears in a report from the department to Manager Bostwick of San Francisco Division.

"It was surprising to see how few people believed that the lighting system installed was gas lighting. In some instances people asked permission to stand on a chair and examine the interior of the

globe, and this, in our estimation, was more to find out whether it was or was not gas lighting than for any other purpose."

Mr. A. Strauch of the Commercial



The Gas Industrial Booth contained a comprehensive display of the best up-to-date heating devices for office building, store and home.

Department of "Pacific Service" was in charge of the electric booth and Mr. F. Talcott of the House-heating Department, San Francisco Division, was in charge of the gas display.



The High Cost of Loafing

[Reprint of article by Dr. Joseph H. Odell in *Association Men*.]

Loafing is the slowest and the most clumsy form of suicide.

Nature makes no mistakes. Man was made for work. Every faculty, every sense, every nerve, and every muscle is planned for a definite purpose and fitted for a specific use. The physical system is a set of skillfully forged and highly tempered tools, and the will is the workman which takes them up and uses them. The eyes are for observation, the brain for thought, the nerves are the carriers of messages from one part of the body to another, the muscles are the engines of physical force, the hands and feet are the machines by which the greater part of the work is done. Industry is the steady running of the entire plant. If any part of it is allowed to rust, rot or fall into disuse the other parts are injured and capable of small or no production.

Take any well-known piece of work—for example, that of James Watt. Watt observed the power of steam in lifting the lid of a teakettle. His brain immediately began a series of comparisons and deductions; it was a problem in rule of three: If the steam from a part of water will lift a three-ounce obstacle, how much will the steam from a hundred gallons lift? Then followed the question of how to generate and direct such a large amount of force. His nerves and muscles began their task—the nerves carrying messages from the brain to the muscles and back again—and boilers, condensers, pistons, valves, wheels, were the result. Every tool that he possessed in his body was put to incessant use during many months and years; that is, he did simply what nature fitted and intended him to do, becoming a world-famous inventor-benefactor.

Sir Walter Scott wrote: "I cannot too much impress upon you that labor is the condition which God has imposed on us in every station of life; there is nothing worth having that can be won without it." Gladstone affirmed: "The laborer has his legitimate, his necessary, his honorable and honored place in God's creation; but in all God's creation there is no place appointed for the idler." Colonel Roosevelt said nothing truer than this: "The

happiest man is he who has toiled hard and successfully in his life work. The work may be done in a thousand different ways—with the brains or the hands, in the study, the field, or the workshop; if it is honest work, honestly done and well worth the doing, that is all we have the right to ask."

Men often complain that they do not possess the genius which nature gave to other men of success. But note what some of the greatest men have to say on that point:

Lord Macaulay, who sometimes wrote on his histories for twelve hours at a sitting, said: "I have made myself what I am by intense labor." John Ruskin wrote: "When I hear a young man spoken of as giving promise of high genius the first question I ask about him is always 'Does he work?'" Byron is quoted as saying: "The only genius that I know anything of is to work sixteen hours a day." Dickens, the novelist, made a similar confession: "My imagination would never have served me as it has but for the habit of commonplace, humble, patient, daily toil." Speaking of himself, Alexander Hamilton said: "People sometimes attribute my success to genius. All the genius I know anything about is hard work." Daniel Webster, at 70 years of age, said in an address: "Work made me what I am. I never ate a bite of idle bread in my life."

There is no way of dodging the issue: Every law of nature discovered by man, every new force applied to human progress, every principle of mechanics worked out for quickening or cheapening production, every invention that has brought the resources of the universe within our reach, every added step in the facilities of transportation, every book that has increased and broadened our knowledge, every work of art that has given us pleasure, every fortune that has been won and enjoyed—everything worth while in life has been the result of work; hard work, conscientious work and ceaseless work. Work is the uphill road to the pinnacle of success; laziness is the down-slope way to failure, shame and disaster.

We pay very little attention to men until they have won some conspicuous success, and then we are likely to forget how heavy a price in patient toil they paid for their achievement.

Johns Hopkins gave seven years of drudging toil to make his first \$800; Andrew Carnegie spent the first eighteen years of his working life in accumulating \$1000 of capital; Cecil Rhodes got hold of his first mine only after fifteen years of ceaseless and tireless work; Watt labored thirty years to bring his condensing engine to perfection; Stephenson gave twenty-five years to making his locomotive practical; laboring his hardest for ten years Peter Cooper was earning only \$9 per week; H. C. Frick fought his way up by painful steps from the farm to Fifth Avenue; F. W. Woolworth toiled and failed and failed again, and still toiled, until he put his money making chain of stores throughout the country. But all those toilsome and painful early years of drudgery and apparent failure are not to be estimated by their immediate financial returns; they form the period of preparation during which the qualities of real success are developed and strengthened. When the critical hour arrives the man who has been schooled and disciplined aright is sure to win. The man who shirks or slurs his work, because it does not pay higher wages, will end by having neither work nor wages. Idleness ends in inefficiency.

Loafing does not mean absolute idleness—hours, days, or weeks in which a man does nothing at all; a man may loaf while apparently working, by doing things listlessly, sluggishly, carelessly and in a don't-care fashion. The loafer is the man who puts momentary ease in the place of definite and strenuous accomplishment; he is the man who works when he feels like it and who never has the courage and will power to conquer his present feelings for the sake of future rewards. John Wanamaker, during the first eight years of his commercial life, did not miss one single day from business, was never late, and never allowed himself to be discouraged. When John D. Rockefeller was a boy he was working on a farm in New York State and dreaming of his future. One day he said to a farm boy about his own age: "I would like to own all the land in this valley, as

far as I can see. I sometimes dream of wealth and power. Do you think we shall ever be worth one hundred thousand dollars, you and I? I hope to—some day." Soon afterwards he moved to Cleveland and found a position as office boy. "I had plenty of ambition then, and saw that, if I was to accomplish much, I would have to work very, very hard, indeed." And he did. Every spare hour was given to study; every branch of business that he touched he mastered, down to the least detail; and out of small wages, by the time he was 25 years old he had saved his first \$10,000.

Whenever the name of John Ericsson is mentioned men invariably exclaim, "Well, there was a born genius!" His inventions were so numerous, and so revolutionary in their nature, that no wonder superhuman powers were attributed to him. The present era of naval construction began when Ericsson's turreted ironclad *Monitor* vanquished the Merrimac in Hampton Roads. A few sentences from the "Life of Ericsson" will show the nature of his "superhuman powers": "He was at the shipyard before any of the workmen, and was the last to leave. In the construction of so novel a craft as the *Monitor* difficulties of a puzzling nature came up every day. If Ericsson could not solve them on the spot he studied the matter in the quiet of the night, and was ready with his drawings in the morning."

Very few men today are working to 50 per cent of their capacity. If history teaches anything it is that those who loaf and lounge, and are lazy when they might work, are headed for poverty and obscurity. There is no case on record where opportunity has picked a young man out of a poolroom and set him in a high position; I do not know an instance where Providence has rewarded indolence. Never before was life so rich in prizes of all kinds as it is today, but never was the law of labor more rigidly enforced in winning them. And nature is without mercy—it never forgets or forgives when a man wastes his time, his brain or his energy. The heaviest tax in the world is that which society exacts from the loafer—it takes everything that he has and leaves him without a single satisfaction. Loafing is the costliest commodity on the market and no one can afford to buy it.



King and Queen Christmas hold court for the entertainment of old and young in "Pacific Service."

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION

With fun and jollity, the atmosphere bright with the spirit of good cheer, with abundance of appropriate gifts for the young and, for young and old combined, a wonderful costumed spectacle, "Queen Christmas," our Association celebrated the season of Yuletide at its annual reunion held, this year, on the evening of Saturday, December 10th, at Knights of Columbus Hall in San Francisco.

This and other features upon our association's annual schedule of entertainment have become so popular that it is not an easy matter to provide an auditorium large enough to hold the throng of men and women employees of "Pacific Service" who come from all parts of our company's territory to attend. Fortunately for the enterprise this year, Knights of Columbus Hall possesses a commodious theatre, but its capacity was taxed to the utmost to hold the crowd that surged about the doors from the moment of their opening.

It is estimated that fully 1,400 were present. Surely a creditable showing and one that speaks volumes for the company and the association and the spirit of fellowship and good will that pervades the whole.

That something worth while was in store for the audience was whispered around the week before the show and that something worth while certainly materialized, for it had been difficult to present a dramatic spectacle more worthy of the occasion than that which the entertainment committee selected. True, it was not conceived and executed within the membership of the association, for "Queen Christmas" is from the pen of that well-known writer, Carolyn Wells, but it was costumed and staged in true professional style and for this Mr. Howard I. Milholland was mainly responsible.

It was decided not to cumber the evening's program with too many items in view of the gift giving and dancing, which were by no means the least attractive features. Accordingly, "Queen Christmas" followed

an opening address by President Creed in which our company's chief executive congratulated the company and the association upon the achievements of the past year, with particular reference to the re-modeled pension system worked out by the Employees Welfare Committee. "We have done our work well and we have worked together well and loyally in the common task," said Mr. Creed. "All the joys of this season be ours."

The Christmas spectacle was cast in a scene depicting the court of King Christmas and his queen consort. Courtiers, pages, steward, herald and the court generally grouped about the stage awaiting the arrival of their majesties. "Pacific Service" orchestra prefaced a musical program in which some time-honored numbers were rendered. The "Adeste Fideles" was remarkably well rendered by a quartette composed of Mrs. Letha Hunt, soprano; Ruth Hall Crandall, contralto; Leon Mills, tenor; Harry E. Fossey, bass. The Arion trio appeared as court musicians, accompanying this and the following numbers with violin, cello and piano.

Leon Mills, who played the part of King Christmas, developed a clear tenor of excellent quality in his rendition of "Noel."

A feature of the show was the appearance of various characters as symbols of the season. Agnes Buckingham proved light of foot and altogether winsome in her impersonation of "Christmas Bells." Another excellent feature was Opal Bettinger as "Christmas Light" in a shimmering gown of gold. Camille Looney as "Christmas Decorations" wore a robe of leaves and holly. Louise Hummel, as "Christmas Snow," brought in the snow flakes. Myrtle Allard and Eleanor Neville brought in "Christmas Gifts." A serio-comic interlude was presented by Edmund Keating, who as "Christmas Feast," appeared in fancy costume which suggested a Beef Eater of old England. In

lusty tones he declared for good food and looked as if he meant what he said. J. W. Buzzell brought forth the Christmas Tree and Helen Engleman appeared as the "Spirit of Love" and looked the part to perfection. An attractive number on the musical program was Miss Engleman's song written to the air of Tom Moore's "Believe Me if all Those Endearing Young Charms."

Of course, Mr. John Britton was Santa Claus. Who else could play the part after all these years? He came in with a jaunty stride, and good nature beamed through his white beard and spectacles. In his address he brought Santa Claus up to date when he said he had left his reindeers in the Arctic and had made the journey to civilization in a twelve-cylinder automobile. He promised next year to descend upon us in an air-plane.

Miss Zita O'Connor made a handsome Queen Christmas and spoke her lines clearly and with spirit. Hugh Flynn, the new assistant secretary of the Association, made a stalwart herald and did the announcing in stentorian tones.

Another attractive feature was the snow sprites ballet, composed of Florence Queenan, Pearl Lovgren, Carol Bowen, Lucille Peterson, Beatrice Goldbeck, Ruth Anderson, all pupils of Miss Irene Hannan. This ballet gave a very delightful exhibition.

Altogether it was a characteristic spectacle well staged and well acted and sung. The cast and musical program follow:

The Court: Queen Christmas, Zita O'Connor; King Christmas, Leon Mills; Steward, Walter Schwartz; Herald, Hugh Flynn; Pages and Courtiers, Winifred McDermott, Margaret O'Mahony, Antoinette Jensen, Alma Tilley, Cecelia Hummel, Florence Allard, and R. Hodgkinson.

The Symbols: Christmas Bells, Agnes Buckingham; Christmas Light, Opal Bettinger; Christmas Decorations, Camille Looney; Christmas Snow, Louise Hummel; Christmas Gifts, Myrtle Allard and Eleanor Neville; Christmas Feast, Edmund Keating; Christmas Tree, J. W. Buzzell; Santa Claus, John A. Britton and Love, Helen Engleman.

Christmas Carols: Quartet, "The First Nowell;" solo, "Virgin's Lullaby," Ruth Hall Crandall; quartet, "Deck the Hall;"

chorus, "Christmas Day;" chorus, "Hail O King and Queen of Christmas;" solo, "Cantique de Noel," Leon Mills; solo, "Christmas Bells," Agnes Buckingham; solo, "Winter Song," Harry E. Fossey; solo, "Drinking Song," Edmund Keating; solo, "Christmas Tree," J. W. Buzzell; solo, "I'm Santa Claus," John A. Britton; solo, "The Spirit of Love," Helen Engleman; Quartet, "Silent Night."

Following the spectacle came the distribution of Christmas gifts by Mr. Britton in his character of Santa Claus, assisted by several willing hands. The children, some in arms, crowded the aisles and it is estimated that some 275 received appropriate toys.

Dancing closed the evening's entertainment.

The coming year gives promise of being one of the most successful in the history of the organization. The membership has been growing apace, and we look forward to 6,000 in 1922.

A chapter has been added to the list of local organizations, the men and women at Pit No. 1 camp and vicinity having perfected their organization and elected their officers for 1922. Quite a bit of interest has been shown in all activities of the association by employees on the construction work, several groups having been formed into classes for the study of our courses. The officers elected to serve Pit chapter in 1922 are:

Miles P. Werry, chairman; Mrs. R. B. Gray, vice-chairman; B. J. Dawkins, secretary.

The Christmas parties held in the various sections marked the close of the year's social activities. Santa was much in evidence, in some cases catering only to the youngsters, in other cases joshing the grownups and in still other cases bringing presents to both. In Colgate Section the Christmas party was held at Colgate power house, Santa feeling that the boys there might feel themselves off his beaten track.

At Auburn in Drum Section the kiddies enjoyed to the full the presents distributed by Santa (who by the way was of the weaker sex), while the grownups enjoyed not only the dancing and entertainment but the antics of the youngsters as well.

At Sacramento the big Christmas party was held on the 21st and was thoroughly enjoyed by kiddies and grownups.

The bookkeeping department of East Bay Division played host at an entertainment and dance given at Ebell Clubhouse in Oakland, on December 13th. All who attended thoroughly enjoyed the show and the distribution of the presents by our friend Santa.

De Sabla Section held its Christmas party on the 17th. Ninety-seven children and 150 grownups were present and all voted the affair one of the most successful held by the Section. The movies of the Drum Snow Carnival and the De Sabla Outing were shown and the folks thoroughly enjoyed seeing themselves in the movies.

Shasta and West Side sections staged their Christmas party on the 17th, when 175 grownups and 50 children made merry, the children, even those who were unable to attend, receiving gifts from dear old St. Nick.

The Fresno Christmas party held on December 7th at Odd Fellows' Hall was voted the finest affair of the year. Candy, cigars and the "national bird" were had, and the two hundred folks, employees and their families who partook of the chicken dinner, left the hall boosters of the P. S. E. A.

San Francisco section concluded its 1921 social activities with a get-together stag party in Native Sons' Hall, in San Francisco, on December 19th. It was the opinion of all who attended that the program committee, Mr. G. L. Tracy, chairman, did themselves proud.

The show opened with Mr. Monk, the whistler, imitating the calls of different birds. Mr. Thompson, house heating department, told a number of new stories as only he can tell them. Dick Hunt of the purchasing department and John Gilbert of Mr. Downing's office sang as delightfully as ever.

Harris O'Lague and Alec Neudelman, 108 lbs., both of the cashier's department, the latter holding championship of his weight in the Y. M. H. Association, put on a fast and clever four-round set-to with the gloves that had the audience on their feet. A dancing number was put on by an orchestra and six star performers

from Purcel's. These colored sisters and brethren surely had jazz and foot melody in plenty. A Hebrew character, by the pride of North Beach, also provided considerable amusement.

Chairman-elect Chas. Larrabee was introduced by Retiring Chairman J. A. Johnson, who paid a closing tribute to the splendid good will of the membership, the hard and consistent work of the committee body of 1921 and bespoke the same for the officers of 1922.

Mr. H. Bostwick, our genial San Francisco Division Manager, in a few earnest words sketched the marvelous growth of the association. Mr. Bostwick's splendid spirit of co-operation is of great value to the P. S. E. A. in general and the San Francisco section in particular.

All this time the audience of about 400 were all busy capturing, taming and devouring ferocious "hot dogs" with bottled Ambrosia to "wet their whistles." During the evening seven hundred "hot dogs" were annihilated.

J. A. J.

Educational activities. The steam course is being distributed, the following list of distributions giving an idea as to the interest shown:

Volta and South Pit, 6 copies; Stockton, 5; Modesto, 8; Colusa, 1; Colgate, 2; Station "C," Oakland, 42; Station "A," San Francisco, 26; Potrero Gas Plant, 19; North Beach Plant, 11; Coleman power house, 2.

Classes have been formed and intensive application to the work is planned to start immediately after the holidays.

The electric course is being compiled and will be ready for distribution about January 15th.

In connection with the Educational Meeting which was held by San Francisco Section at Station "A" on the evening of November 15th, Mr. F. C. Seeba, of the Electric Department, was awarded the prize for the clear and concise manner in which he expressed himself on the subject "Winning the Public." Mr. Seeba's contribution was as follows:

"The best way to win the full confidence of the public is to have all of its employees understand that they are working for a public service or utility

company; that the company derives its franchises and privileges from the community in which it operates and it is the duty of its employees to serve the public as faithfully, efficiently and courteously as possible.

"Each one owes his employment to the public as well as to the company. An employee who is courteous to the public is merely doing his duty and performing the functions which are expected of him and for which he receives his compensation.

"If, as an employee, you are overbearing and inconsiderate of a consumer's rights and desires, that consumer naturally judges the company by your actions, which he assumes reflects the policy of the company. On the other hand, a courteous employee can do much to keep up the pleasant relations between the company and its consumers.

"The favorable impression made upon a consumer who starts to register a vigorous complaint and finds he is confronted by a courteous employee, quick to understand his difficulties and eager to remedy them, can not be overestimated. From being one of the company's most severe critics the consumer becomes one of the company's best friends.

"The moral of this is, that if the public is friendly with the company, without a doubt you have their full confidence."

H. B.

Tentative plans have been made for the various social affairs to be held during the coming year under the direction of the parent body. The plans are being discussed now in the various sections, it being necessary that the sections give their approval.

Following is list of officers for 1922:

Officers: W. M. Henderson, chairman; J. S. Worthington, vice-chairman; R. W. Robinson, secretary; Hugh F. Flynn, asst. secretary; R. E. Crossman, treasurer; J. C. Carmody, asst. treasurer; R. W. Duval, attorney; F. E. Oldis, auditor; John A. Johnson, member-at-large.

Executive Committee: E. G. McCann, R. W. Duval, Geo. B. Baldwin, Walter Skinner, W. H. Cohick, J. W. Fallon, Chas. H. Suydam, Walter Sultan and A. U. Brandt, ex officio.

Standing Committees: Sectional activities, Hugh F. Flynn, chairman; Educational, R. R. Cowles, chairman; Benefit and Loan, Chas. H. Suydam, chairman; Social Activities, R. W. Duval, chairman; Publications, E. G. McCann, chairman; Memberships, R. E. Crossman, chairman; Announcement and Attendance, Walter Sultan, chairman; Recreational Activities, Walter Skinner, chairman; Women's Affairs, Geo. B. Baldwin, chairman, Miss Bertha Dale, vice-chairman; Reception, W. H. Cohick, chairman; Athletic, J. W. Fallon, chairman; Editorial, F. S. Myrtle, chairman.

Local Sections: Colgate, J. C. Murphy, chairman; De Sabla, C. E. Donaldson, chairman; Drum, Dan C. Stewart, chairman; East Bay, H. W. Beekman, chairman; Fresno, L. R. Stubblefield, chairman; North Bay, A. T. Kelly, chairman; Sacramento, Geo. F. Smith, chairman; San Francisco, C. E. Larabee, chairman; San Joaquin, H. A. Walker, chairman; San Jose, H. S. Lane, chairman; Shasta, T. B. Copeland, chairman; West Side, Stephen Goin, chairman.

TRIBUTE TO OUR WELFARE COMMITTEE

Mr. John A. Johnson, who at the close of the present year retires from the chairmanship of San Francisco section of our Pacific Service Employees Association, to act as delegate-at-large from the association to the Employees Welfare Committee of our company, has written to the editor of PACIFIC SERVICE MAGAZINE a brief review of his impressions of that section of our company's working organization whose aim is to bring company and employees together in the bonds of loyalty and good fellowship.

Mr. Johnson, in simple, sincere words, pays tribute to the Employees Welfare Committee. He writes:

"Since my first introduction into the Pacific Service Employees Association activities I have sensed a strong and earnest influence behind this organization that seemed to steady it and give it additional stability and character as the year went on. Of a necessity this must be the company, which is personified in this case by the Employees Welfare Committee, consisting of, as is generally

known, Mr. F. A. Leach, Jr., chairman, Messrs. W. E. Creed, J. A. Britton, A. F. Hockenbeamer, J. P. Coghlan, R. E. Fisher, E. G. McCann, A. U. Brandt and Jos. Worthington. Surely a list of names to conjure with.

"When the great honor fell to me to sit on this committee as delegate-at-large I am free to confess that I was somewhat apprehensive as to how I would fit into this body, how I could prove of any value and thereby justify, to some degree, the confidence and honor reposed in me. However, after my initial sitting on the Welfare Committee it might interest the reader to learn that I found this the most democratic body I ever had the

pleasure of sitting with. It struck me that its chief purpose is to counsel and aid the P. S. E. A. in becoming a still greater factor for good among ourselves and a still greater asset to the company and the public whom we serve, to remove misunderstandings that may exist and to establish and maintain still greater confidence and faith between the company and their employees.

"With these first impressions in mind, I feel that if I can contribute by any act of mine, however humble, in the forward work of this Committee I shall feel that I have in a small degree, at least, justified the association's choice in the convention of November 5th."

Axiomatic Apothegms or Self-Evident Truths

Mr. Jewett C. Gilson, a prominent educator and lecturer, addressed the Electric Club in Oakland recently upon the wonders of nature. In the course of his address he gave some axiomatic or self-evident truths which, he stated, were the culling of his life's work. These created so much interest among those who heard his lecture that there was a general request for their publication in *PACIFIC SERVICE MAGAZINE*. They are reproduced herewith:

1. We are but pickers of shells and pebbles on the shore of the great ocean of truth.
2. Our greatest ignorance is the ignorance of our ignorance.
3. Luck is a fool. Pluck is a hero.
4. Each man has within him undeveloped innate powers of great possibilities.
5. We are always happier and more successful when laboring in the congenial field for which we are best adapted.
6. Courtesy costs but little and often pays big dividends.
7. Faithfulness to every trust reposed in us is conducive both to success and peace of mind.
8. Nothing succeeds like success.
9. By finding better ways for doing our work, we are led towards the two p's, prosperity and promotion.
10. One of the most essential factors in every line of business is system.
11. Promptness and willingness to perform every duty are commendable virtues and win a good name.
12. Every man should have a worthy hobby outside of his own occupation, as a pleasant recreation.
13. Persistency in the right direction is often the winner.
14. By remembering persons' names we get nearer to them.
15. Both look and think before you leap.

The Financial Side of "Pacific Service"

Following is condensed approximate Income Account Statement for the month of November, 1921, compared with the same month last year:

CONSOLIDATED INCOME STATEMENT (Including operations of Mt. Shasta Power Corporation)

MONTH OF NOVEMBER

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$3,035,039.79	\$3,103,524.25		\$ 68,484.46
Maintenance.....	230,023.11	277,891.45		47,868.34
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	1,742,615.15	1,832,343.82		89,728.67
Total Expenses.....	\$1,972,638.26	\$2,110,235.27		\$ 137,597.01
Net Income.....	1,062,401.53	993,288.98	\$ 69,112.55	
Net Interest Charges.....	373,852.62	381,290.42		7,437.80
Balance.....	\$ 688,548.91	\$ 611,998.56	\$ 76,550.35	
Bond Discount and Expense.....	33,270.07	30,064.68	3,205.39	
Balance.....	\$ 655,278.84	\$ 581,933.88	\$ 73,344.96	
Reserve for Depreciation.....	283,333.33	232,494.25	50,839.08	
Balance to Surplus.....	\$ 371,945.51	\$ 349,439.63	\$ 22,505.88	
Dividends Accrued on Preferred Stock.....	197,986.50	156,942.85	41,043.65	
Balance.....	\$ 173,959.01	\$ 192,496.78		\$ 18,537.77

The above Income Account shows practically stationary gross, heavily decreased operating expenses and an increase of about 9% in net. In these respects it follows quite closely the published statements for some months past. Electric rates were about 9% lower this November, making a difference of approximately \$170,000 on the month's business. While the public has had the benefit of this entire reduction, gross operating revenues for all departments show a negligible decrease—only slightly over 1%—due to favorable offsetting factors, such as increased gas sales, increased volume of electric sales and a greater ratio of higher priced energy sold for commercial and household purposes.

Operating expenses, after providing for about \$90,000 of additional taxes and contingency reserves, decreased by \$137,597.01. In view of the fact that the normal winter rainfall this year did not develop as early as last season, necessitating a reduction of approximately 11% in hydro-electric generation, this cut in expenses is particularly satisfactory and emphasizes the benefits which may be anticipated from the Company's new and only partially completed hydro-electric developments in the Pit River basin on streams having a certain and almost unvarying flow throughout the year. The two small plants recently completed on Hat Creek in that basin, with a combined installed capacity of 33,512 H. P., were unaffected by the water shortage

in November and aided materially in holding operating costs down to the favorable basis shown in this month's report. Pit River Plant No. 1, with an installed capacity of 93,834 H. P., which it is expected will be in operation by July 1st, 1922, will still further insure an adequate supply of hydro-electric energy, regardless of seasonal precipitation or water storage conditions.

Comparative statement for the twelve months ended November 30th, follows:

TWELVE MONTHS ENDED NOVEMBER 30TH

	1921	1920	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$37,550,562.57	\$34,209,972.99	\$ 3,340,589.58	.....
Maintenance.....	3,245,844.83	2,662,567.18	583,277.65	.....
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	20,781,341.34	20,212,925.53	568,415.81	.....
Total Expenses.....	\$24,027,186.17	\$22,875,492.71	\$ 1,151,693.46	.....
Net Income.....	13,523,376.40	11,334,480.28	2,188,896.12	.....
Net Interest Charges.....	4,740,307.61	4,494,203.29	246,104.32	.....
Balance.....	\$ 8,783,068.79	\$ 6,840,276.99	\$ 1,942,791.80	.....
Bond Discount and Expense.....	388,991.14	293,828.09	95,163.05	.....
Balance.....	\$ 8,394,077.65	\$ 6,546,448.90	\$ 1,847,628.75	.....
Reserve for Depreciation.....	3,349,435.89	2,763,866.12	585,569.77	.....
Balance.....	\$ 5,044,641.76	\$ 3,782,582.78	\$ 1,262,058.98	.....
Dividends Accrued on Preferred Stock..	2,173,760.93	1,798,314.45	375,446.48	.....
Balance.....	\$ 2,870,880.83	\$ 1,984,268.33	\$ 886,612.50	.....
Dividends Accrued on Common Stock..	1,700,202.90	1,700,202.90	.....	.....
Balance.....	\$ 1,170,677.93	\$ 284,065.43	\$ 886,612.50	.....

The number of customers added in November was 3,733, making a gain of 29,787 in the twelve months to November 30th, 1921, and bringing the total number of customers served at the close of November up to 596,404. It seems probable that the 600,000 mark will be passed by the close of the year.

The constant addition of new customers in all departments and the increased volume of both electric and gas sales afford the surest indication of the continuing growth of the Company's business, as these factors, unlike the usual criterion of gross revenues, are not influenced by changes in rates.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF
THE PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - EDITOR-IN-CHIEF
FREDERICK S. MYRTLE - - MANAGING EDITOR
A. F. HOCKENBEAMER - - BUSINESS MANAGER
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*The Pacific Gas and Electric Company desires
to serve its patrons in the best possible manner.
Any consumer not satisfied with his service
will confer a favor upon the management by
taking the matter up with the district office.*

VOL. XIII DECEMBER, 1921 No. 7

EDITORIAL

PACIFIC SERVICE MAGAZINE
TO
ITS READERS
GREETINGS!

We have much pleasure in extending to you, one and all, the compliments of this most joyous season of the year, when messages of good will are borne upon the air to the farthest corners of the earth.

We hope and expect that the coming year of 1922 will be one of successful accomplishment that will bring prosperity as well as happiness to all in this loved land of ours. May our best hopes and expectations be realized!

Looking back upon the twelvemonth now closing we of "Pacific Service" feel that we can look our patrons, our stockholders and ourselves squarely in the eye and congratulate one another upon a

period of activity in every direction that has resulted in much that is worth while.

It certainly has been an eventful year and one in which we venture to think much has been accomplished. Upon the electric side "Pacific Service" has played its full part in the comprehensive hydro-electric development plan that has been heralded for the entire State of California and whose completion, while involving, possibly, the expenditure of something like half a billion dollars, will make this western wonderland something to be talked about in terms of genuine admiration for a wondrous record of progress in an age where progress alone counts. In the Pit River region the construction crews have worked night and day at their task of harnessing the streams that, springing from the lava beds of the Cascade Mountains, have earned fame far and wide for their dependable flow that means so much to the farm, the mine, the factory and every other industry whose successful operation depends largely upon available electric power.

It has already been recorded in these pages that our two plants on Hat Creek are now in full operation and are daily transmitting their output of electric energy along the sixty-mile pole line that has been constructed from Hat Creek to Cottonwood, where the tie-in with our main "Pacific Service" distributing system is made. On the Pit River itself it is expected to celebrate New Year with appropriate ceremony in honor of the boring of the 10,180-foot tunnel that will carry water from the Fall River valley to a point above the Pit whence it will be dropped to turn the wheels of a giant power house on the river bank, the foundation for which has already been poured and preparations made for placing the 40,000 horsepower turbines.

Everything in this section of our activities has moved with record speed, and it is confidently expected that by early in July next the first of the five projected developments on the Pit River will be in full operation with an installed capacity of 93,000 horsepower. By that time the double-circuit steel tower transmission line from Cottonwood to our company's new distributing substation near Vacaville will be in readiness to carry

the electric energy from the Pit on its 300-mile journey to the bay of San Francisco, making 200 miles of the distance at the hitherto untried pressure of 220,000 volts.

Electricity fills the public eye by its spectacular achievements. Nevertheless, it must not be forgotten that our old reliable standby, gas, holds its place in the field of enterprise. As an industrial fuel, as a house-heating agent and in various other useful ways gas has not only not retrograded but is growing in public favor and public demand every hour. On the commercial side the record of our sales department bears witness to this. Meanwhile, the construction department presents its record of achievement, particularly in extensions of high pressure systems, notably that between Sacramento and Woodland, a distance of 23 miles, and that between San Jose and Los Gatos, a distance of 12 miles. Concerning the former, this new system removes the old Woodland gas works from the landscape, and on its way takes in rural settlements, notably the town of Davis, that never before knew gas service. Similarly, the old gas plant at Los Gatos too disappears and the new high pressure service from San Jose takes in the town of Campbell en route and distributes gas where that commodity was never before available.

These accomplishments may portend much. They seem to point to the elimination, at some future time, of the small local gas works, so that through the continued development of high pressure systems rural communities will be served with gas from the great manufacturing plants in the nearest large cities, just as those same rural communities are served with electricity today by the transmission systems that carry the precious "juice" from the water-power plants in the far-away mountains. It is all in accord with the twentieth century policy of centralization.

By no means the least important feature of our "Pacific Service" record of achievement for 1921 has been the establishment of more intimate relations between the outside members of our "Pacific Service" family and ourselves

through a series of stockholders' meetings held during the fall over our entire "Pacific Service" territory.

These meetings were referred to in our October issue, with the explanation that they had been brought about through the desire of the executives of our company to acquaint its stockholders by personal contact with the very satisfactory condition and progress of the company, giving them, at the same time, an insight into the problems which daily confront the management in the conduct of a public utility. This, of course, involved discussion of matters not only of construction and operation but, also, of finance, so that those who attended the meetings had an opportunity to learn from the lips of the executives themselves all that there was to be learned about the company, its physical properties, its resources, all that had been done and was about to be done in the way of additions and improvements of service to consumers, as well as the amounts of money involved and how they had been expended and were intended to be expended; in a word, every meeting was resolved into an open account of their stewardship presented to the owners of the utility by those upon whose shoulders rested the responsibility of carrying out the great and sacred trust reposed in them by those owners.

As President Creed explained: "Customer ownership is the best public ownership and the thousands of stockholders of the Pacific Gas and Electric Company represent so large a part of the public that better and wider knowledge of the company's affairs cannot help but be serviceable both to the company and to the public."

The list of these sectional gatherings closed in December, and it may be stated right here that the experiment, if such it may be called, proved an unqualified success; for, not only were our company's stockholders given the most intimate insight into its workings but they were invited to interrogate the speakers upon any and all matters not made clear to them. It is safe to say that such a plan as was followed out in these meetings has resulted in bringing the company and stockholders together in bonds of mutual confidence and understanding.

Tidings From Territorial Divisions

East Bay Division

A carload of live rose bushes have been shipped every day from Niles, Alameda County, by the California Nursery Company for more than a week past, and the shipments are continuing at the same rate. Each car carries from 20,000 to 30,000 roses, and the bushes and plants are so packed that they reach their destination in perfect shape for planting in hot houses, or, where the climate will permit, in the open.

The shipments are made mostly in refrigerator cars. These cars are built to withstand changes in temperature and climate from the outside, and the bushes go through with as little bad effect from the changes of climate experienced all along the route as it is possible to get. Some shipments have been made in ordinary box cars, the bushes being especially packed, but the refrigerator car has proved to be the car that withstands the climatic changes en route to the best advantage.

Californians have become accustomed to stories about the shipment of food-stuffs, orchard products, citrus fruits and dehydrated fruits to the markets of the East. Many shipments of field and orchard products, either fresh or processed, have been made, but it is not generally known that such large shipments of one flower plant are being made.

The California Nursery has long been known for its wonderful plants, particularly its roses. One hundred acres are devoted to bush and standard roses, and it is from this field that shipments are being made. Several hundred thousand plants will be shipped from Alameda County to all parts of the United States this year, and this will be one of the biggest advertisements that the climate and soil of Alameda County could have. These plants, grown out of doors, will land in the East in the middle of winter, ready to bloom in a very short time.

Irrigation by electric power is an important factor in this nursery.

Antioch is in the midst of the best season of vegetable shipping it has ever experienced. With the Thanksgiving holidays past, an average of four cars of celery a day is being shipped East and an equal number of cars of potatoes are going forward each day. Celery growers of the delta say the best season they have experienced is certain. The heavy rain early in the week has aided the celery considerably, growers declare.

The population increase in Irvington in a year is estimated as amounting to approximately 200 per cent, which will give the town more than 3,000 people, making it one of the principal points between Oakland and San Jose.

The increase estimated is due to the building there of the Reid Brothers' hospital supply factory, which will employ a large force of skilled workmen. Work on the factory is now progressing rapidly and, at the same time, a number of new homes are going up.

Boom times for Irvington, according to the way they tell it, came to town on a bicycle. George Robinson, a resident of San Leandro, went up there on his "bike" to investigate reports that the town was going to grow as the result of the Reid factory development. He made inquiries at real estate offices, but bicycles and wealth not having been associated much together of late no one paid much attention to him until Otto N. Hirsch took him in tow and sold him a house and a group of lots for cash. Robinson is making place to build a number of bungalows.

J. A. Royster, our agent at Martinez, says:

MARTINEZ is an old fashioned town.

BUT

All of the streets are being paved. New industries are coming in. Old industries

are being enlarged. The aggregate pay rolls of these industries amount to approximately \$300,000 monthly.

HERE, THEN, IS OPPORTUNITY

Center of Western Oil Refining.
Three Oil Pipe Lines.
Four Oil Refineries.
Copper and Zinc Works.
Monthly Pay Rolls Approximately \$300,000.
Hydro-Electric Power Lines.
County Seat of Contra Costa, One of the Largest Manufacturing Counties in California.
Transcontinental Railways.
Deep Sea Water Transportation Facilities.

Of particular interest at the recent stockholders' meeting in Martinez, Mr. Geo. M. Frazer, one of the oldest citizens and pioneers of the county, stated that it was the first time he has been out of his home of an evening in eight years.

A recent installation of interest made during the month was that for Mr. P. Peterson, 1452 23rd Avenue. This was a 6-foot range which formerly had an oil-burning fire-box in the center. The oil-burner was removed from the fire-box and replaced with four special atmospheric burners equipped with Hale mixers. The gas is burned under the grate bars, using about 6 inches of broken fire brick which becomes red hot and creates a very good heating surface for radiation. The range gives an ideal and even heat for baking and its economy of operation has proven very satisfactory to the consumer.

Geo. L. Donovan, our agent at Niles, who incidentally is a "Go-getter," recently signed up Reid Bros., manufacturers of hospital supplies, for their proposed plant in Irvington which has been referred to. The ultimate load will approximate 500 horsepower.

Deckelman Bros., well-known barber supply house of San Francisco, are to have a new home in Oakland, located on the southwest corner of 17th and Telegraph. This will be a class A, three-story building.

Local architects have plans in their offices for more than 60 new apartments to be located in this ideal apartment house city, and several substantial commercial buildings in addition to those now under construction will soon add to the attractiveness of the business section of Oakland. Work on all of these plans will be started early in 1922, and the aggregate cost will amount to more than \$15,000,000.

The branch office of the Motor Vehicle Department of the State of California will soon locate in a new building on Harrison Street. A fine display of co-operation on the part of the city officials and civic organizations brought this branch office to Oakland for the convenience of thousands of East Bay motorists.

Work has started on the new printers' building to be built by Max Horwinski, a four-story, all concrete structure. It is said that there will be not even a splinter of wood in the entire building. The electric load which we will supply is estimated at 110 horsepower.

The largest public market in Oakland will soon be opened by Mr. Wm. Mooney, on Broadway between 19th and 20th Streets, affording a floor area of 260,000 square feet. It will include a modern bakery, meat market, fruit and grocery departments.

Another large consumer will be Thomas Day & Co., well-known manufacturers of lighting fixtures, who are to occupy four floors of the Proctor Building, at 1728 Broadway. Some features of the load are the 500 outlets, a 7 horsepower elevator and a very desirable steam load.

The Oakland Title Insurance and Guaranty Company, A. F. Abrams, vice-president and general manager, is building a new 3-story building on the southwest corner of 15th & Franklin Streets. The foundation was designed with a view of later increasing the size of the building to eleven stories. There will be 175 lighting outlets and a 7½ horsepower elevator.

The Rip Van Winkle Wall Bed Company have just commenced erection of a new factory at 22nd and West Streets for the manufacture of disappearing wall beds. "Pacific Service" will supply the electric power for motors and the gas for a jappanning oven.

We recently sold and installed for Chas. Hilsenbeck, 1919 Ashby Avenue, Berkeley, a No. 3 Roberts portable bake oven. This is the second oven of this type sold by us in the last few months and is becoming very popular among hotel and restaurant men. The even heat and economy of operation are the outstanding features of this appliance.

H. V. P.

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San Joaquin Division

A series of lectures accompanied by slides and moving pictures are now being given in this Division, under the direction of Mr. Louis J. Nevraumont of the Modesto office. Meetings have been held at Empire, Keyes, Denair, Oakdale, and Hughson, and up to the present time the total attendance has aggregated upwards of 400 people. A most hearty reception is accorded our speaker on all occasions. At all these meetings, at the close of the address, those in attendance have moved a vote of thanks to the company and to Mr. Nevraumont in appreciation of our efforts in bringing the activities of the company before the public at large.

The meetings are held in every case under the auspices of either the Farm Bureau or the Chamber of Commerce, as the case may be, the smaller communities having Farm Bureaus and the larger ones Chambers of Commerce; and the cordial response which has greeted this feature has been most gratifying. It is proposed to hold these lectures at points all over the Division, as well as in Stanislaus County, and plans are now on foot to that end.

A meeting of the newly organized Electrical Contractors and Dealers Association of Stanislaus County was recently held at Modesto office. There were approximately thirty-five persons pres-

ent, and a very enthusiastic meeting was held. Dealers from a number of points in the county were present, as well as the City Electrician, representatives of the Telephone Company, the Power Company, and various other branches of the electrical fraternity.

Authorization has been received for the expenditure of approximately \$50,000 for the construction of a 60,000 volt line from Modesto to Turlock in order to better service to the latter city. This is an improvement which has long been hoped for, and the news of the approval of the G. M. covering it is being received with much pleasure.

Work is being rushed on the new clubhouse at Electra Power House, which will shortly be completed.

The new building which is to be occupied jointly by the Modesto Chamber of Commerce and the California State Auto Association at Modesto is rapidly nearing completion. It is located on the Southern Pacific reservation near Ninth and "J" Streets. The building is to be of stucco, in the California mission style of architecture, one story high, and from all indications will be a great addition to the public buildings of the city.

Mr. E. H. Lowe, estimating man at Modesto, sold his patent transformer fuse plug puller to one of the large electrical manufacturing companies the other day for a very satisfactory sum of money. Mr. Lowe has been working for the Power Company here for the past twenty years, and he is receiving the heartiest congratulations on all sides upon this piece of good luck.

Mr. Sid Graf, for the past year and a half M. & S. clerk at Modesto, has been transferred to the Sonora office to assist Mr. Noack, as cashier and clerk. Mr. Graf's position at Modesto has been filled by the transfer of Mr. E. E. Bither, formerly of Tracy office, to Modesto. We wish both Mr. Graf and Mr. Bither all success in their new work.

M. L. R.

Sacramento Division

Sacramento has voted bonds for the completion of the filtration plant and new city wharves to the tune of \$1,100,000. At the same election the city decided in favor of one-man cars.

The Sacramento Chamber of Commerce is to dedicate its beautiful new building on the 29th of December. The exercises are to consist of a reception beginning at 2:30 P. M., a banquet at 6:30 P. M. lasting until midnight.

This project originated December 8, 1920. The cost was estimated at \$80,000, all of which was fully subscribed by March, 1921. The cornerstone was laid September 7th, and now the culmination. We certainly are very proud of our Chamber of Commerce and its work. The Auditorium affords a long needed accommodation. In banquet formation 450 can be accommodated without pillars or posts obstructing the vision.

The offices are on other floors and so arranged that the desks can be quickly removed and the space used for purposes of reception, etc. The president's and directors' rooms adjoin the main office, while on the mezzanine floor are provided offices and committee rooms of various sizes. A modern kitchen adjoins the Auditorium making it convenient to handle large banquets and, by means of dumb waiters, to provide committee luncheons in other parts of the building. In short, it is a complete building to take care of the needs for which it was erected.

There is a great question before us now and that is the parking of automobiles on our streets and the use of our streets by trucks, stages and other heavy vehicles. The blocking of our streets is becoming a serious question. New parking rules, stating methods and time allowances, are under consideration. Also, time limits for the use of retail district streets. It is suggested that all trucking and use of this district for delivery of freight shall be during the forenoons only, also, all alleys shall be used by teams going from west to east only. The route for stage coaches is also being determined. This

last business is becoming a very large one and the number of people accommodated is certainly great. The matter is now in the hands of the city council and manager and we feel will be properly taken care of.

Christmas is on us with all its allurements, its pleasures. There is no time of the entire year that the opportunities for real demonstrations of the Golden Rule are afforded as that which this wonderful season presents.

Observation of the marts of trade show most wonderful displays of Christmas merchandise, not forgetting the artistic work of that greatest of all salesmen, namely, the "window dresser." It is a study of human nature worth traveling miles to see. Let this sweet remembrance of the Christmas season grow stronger as the years grow older, and down to the lowest depths with him who says, "Santa Claus is a myth!" He is the sweetest of all the Saints.

We had our Christmas tree at the Tuesday Club House December 21st. Gifts for all both great and small. The evening closed with a dance.

I had hoped to give an exact account of the great building boom that is on here, but the details were not quite ready from the official city forces, so I shall postpone this until next month. Suffice it to say there never were so many buildings going up here as there are now in course of construction. We rank near the top in the percentage list.

THE CAPTAIN.

San Francisco Division

On the 29th of November one of the most successful "Get together dinners" ever held in San Francisco was conducted by the Gas Appliance Society.

In May of this year men comprising Gas Appliance Manufacturers, Retail and Wholesale Appliance Dealers and Central Station men formed this society for the purpose of better merchandising of all gas appliances. With sixty-five members in good standing, November 29th was decided upon as the date to deliver our message and become acquainted with the Retail Hardware Dealers

of the bay cities, as well as the Furniture Dealers and the Master Plumbers.

Invitations were mailed to approximately two hundred guests to meet at six-thirty P. M. at 241 Stevenson Street where the banquet was served in the largest gas laboratory in the West, donated for the occasion by the Pacific Gas and Electric Company. Entertainment consisting of music and singing was programmed during dinner hour. The repast was served from the bank of display ranges in the laboratory.

At 8 P. M. Geo. Eggleston, President of the Association, addressed the assemblage, numbering one hundred and seventy, on the purposes and aims of the Society. Mr. H. Bostwick, Manager of the San Francisco Division of "Pacific Service," welcomed the Association and guests to the Laboratory.

Mr. W. E. Creed, President of the Pacific Gas and Electric Company, was introduced as first speaker. Mr. Creed's remarks concerning the company's policy in the matter of gas and electric appliances were received with applause. Following Mr. Creed's address Mr. Douglas White, Manager of the Retail Furniture Dealers Association, spoke of the wonderful opportunity open to the Gas Industry to co-operate with the Gas Appliance Society to bring about a better understanding between all dealers in appliances.

Mr. Roy Smith, Secretary of the Hardware and Implement Dealers Association, spoke of his work for the past several years in bringing about co-operation among the hardware dealers of this State. The excellent results obtained by his association were an inspiration to the gas men.



Gas Appliance Society banquet at our company's Industrial Gas Laboratory in San Francisco.

Mr. C. B. Babcock, President of C. B. Babcock & Company, followed with most interesting facts and figures concerning the appliance industry and its activities in the bay cities.

Mr. R. E. Fisher, Manager of the Commercial Department, Pacific Gas & Electric Company, sprung the surprise of the evening with three clear cut statements, which, if followed out by the appliance industry, will be the means of reverting the sale of appliances from the Gas Company to the Retail Dealers of the various cities over its system. His statement that the public must be served first clearly outlined the policy of the Gas Company, first, last and always.

Mr. G. A. Lenoir, Chairman of the Retail Furniture Dealers Association and President of Bare Brothers, was in rare form. As an after dinner speaker he has a style all his own. He is like a good dessert after a good dinner. He also proved to be some organizer. In five minutes' work over twenty-five members were added to the list of the Gas Society.

Mr. J. A. Britton, Vice-president and General Manager of the Pacific Gas & Electric Company, closed the meeting with an interesting summing up, so to speak, of the various subjects of the evening. The esteem in which Mr.

Britton is held evidenced itself in the prolonged applause that greeted his introduction by Mr. Eggleston.

This Society is off to a splendid start. Its aims are of the highest ideals. First, the public must be served. Second, the Standard of Appliances the Best. Third, Co-operation spells Success.

LONG MAY IT PROSPER.

Mr. W. F. Neiman has been appointed Assistant Superintendent of the New Business Department of the San Francisco Division, and as such will have

charge of all matters having to do with the signing up of new electric consumers as well as direct supervision of all salesmen and other employees in the electric branch of our New Business Department.

Mr. Frank Talcott, Superintendent of the New Business Department, will continue to have direct supervision of all branches of the new business activities in the San Francisco Division. We are glad to again welcome Mr. Neiman into the ranks of "Pacific Service."

H. B.

President Harding on Tax-Exempt Securities and Increasing the Federal, State and Municipal Debt

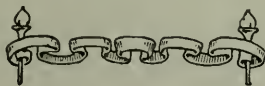
(Excerpt from the President's Address to Congress, December 7, 1921)

"There are full score of topics concerning which it would be becoming to address you and on which I hope to make report at a later time. I have alluded to the things requiring your earlier attention. However, I cannot end this limited address without a suggested amendment to the organic law.

"Many of us belong to that school of thought which is hesitant about altering the fundamental law. I think our tax problems, the tendency of wealth to seek non-taxable investment and the menacing increase of public debt, Federal, State and Municipal, all justify a proposal to change the Constitution so as to end the issue of non-taxable bonds. No action can change the status of the many billions outstanding, but we can guard against future encouragement of capital's paralysis, while a halt in the growth of public indebted-

ness would be beneficial throughout our whole land.

"Such a change in the Constitution must be very thoroughly considered before submission. There ought to be known what influence it will have on the inevitable refunding of our vast national debt, how it will operate on the necessary refunding of State and Municipal debt, how the advantages of Nation over State and Municipal, or the contrary, may be avoided. Clearly the States would not ratify to their own apparent disadvantage. I suggest the consideration because the drift of wealth into non-taxable securities is hindering the flow of large capital to our industries, manufacturing, agricultural and carrying, until we are discouraging the very activities which make our wealth."



The Long Swing Upward

A statistical curve of bond prices shows long swings upward or downward, accomplished by minor advances and reactions. A chart of bond prices for the last quarter of 1921, however, will not show a curve, but almost a vertical line, so rapid have advances been.

The student who looks beneath mere surface indications will tell you that fundamental conditions have pointed conclusively to present market activity. He will tell you that there is building up now a surplus of credit, just as there is a surplus of commodities---and that this credit must seek an outlet.

Ask him for advice, and he will tell you that bonds, despite recent advances, are still selling much below average low prices, below their intrinsic worth, doubtless below the levels indicated for the future.

You can still obtain attractive yields on your money and anticipate a splendid profit through appreciation by buying bonds now. Let us tell you about a few very good issues now available. Sending for detail information does not obligate you.

BLYTH, WITTER & Co.

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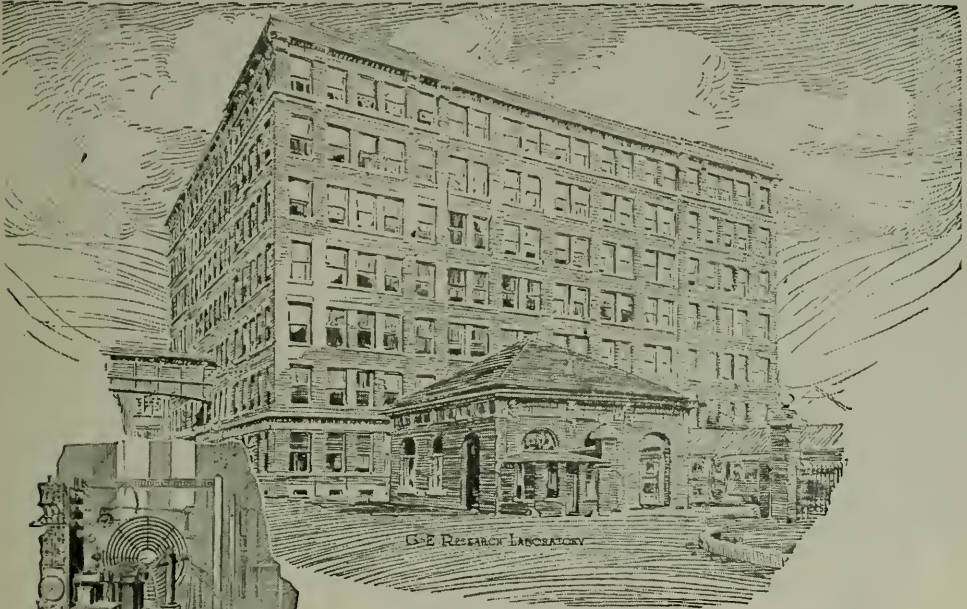
OAKLAND OFFICE: EASTON BUILDING

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Los Angeles



The Service of an Electrical Research Laboratory

The research facilities of the General Electric Company are an asset of world-wide importance, as recent war work so clearly demonstrated.

A most interesting story tells of the devices evolved which substantially aided in solving one of the most pressing problems—the submarine menace. The results attained in radio communication, special X-ray equipment for field hospital service and many other products, for both combatant and industrial use, did their full share in securing the victory.

In the G-E laboratories are employed highly trained physicists, chemists, metallurgists and engineers—experts of international reputation. These men are working not only to convert the resources of Nature to be of service to man, but to increase the usefulness of electricity in every line of endeavor.

Scientific research works hand in hand with the development of new devices, more efficient apparatus and process of manufacture. It leads to the discovery of better materials, which ultimately make happier and more livable the life of all mankind.

Booklet Y-863, describing the company's several plants, will be mailed upon request. Address Desk 37

Some of the General Electric Company's Research Activities During the War:

Submarine detection devices
X-ray tube for medical service
Radio telephone and telegraph
Electric welding and applications
Searchlights for the Army and Navy
Electric furnaces for gun shrinkage
Magnetoinsulation for air service
Detonators for submarine mines
Incendiary and smoke bombs
Fixation of nitrogen
Substitutes for materials

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C. D. STEIGER, Secretary

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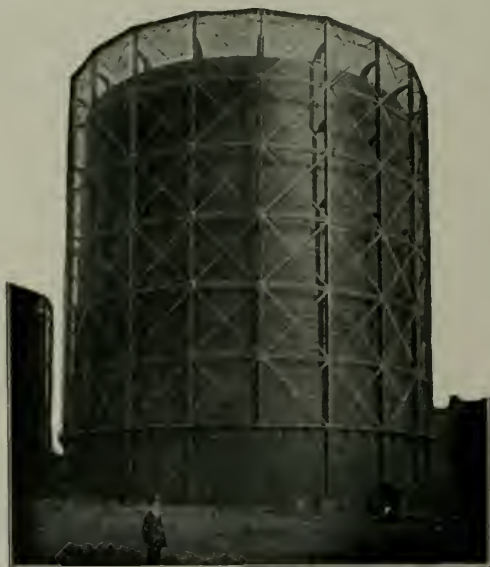
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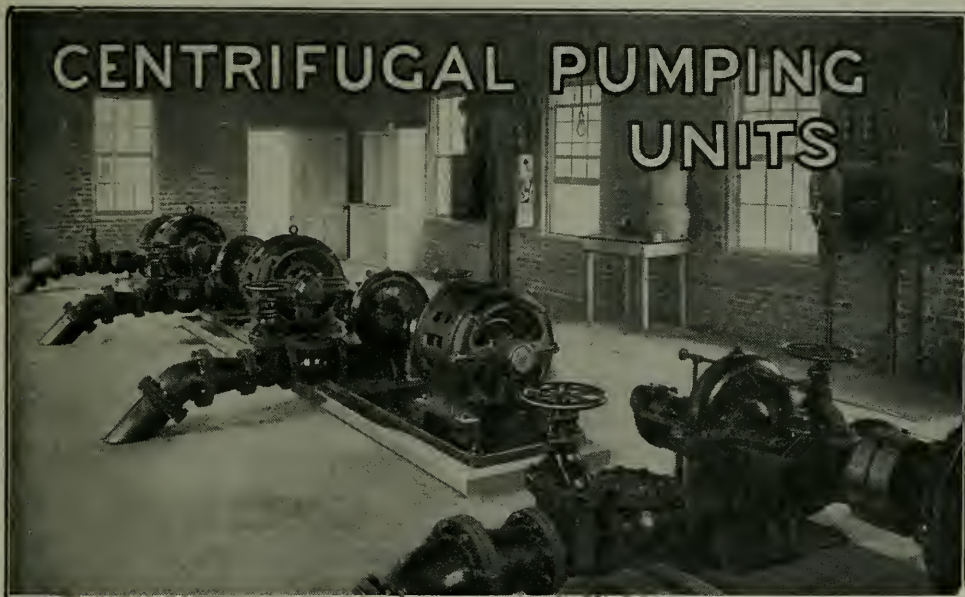
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Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

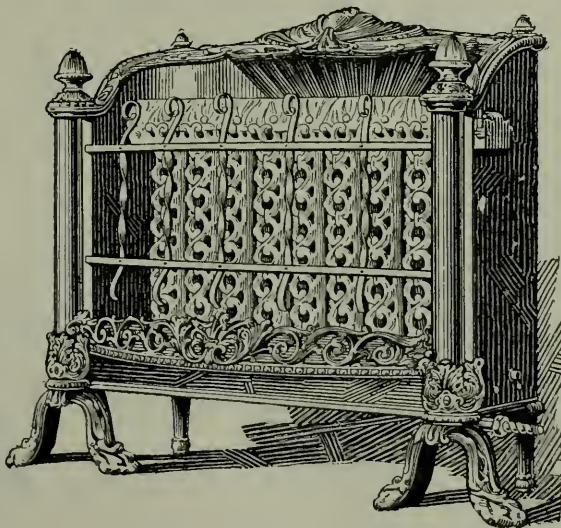
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

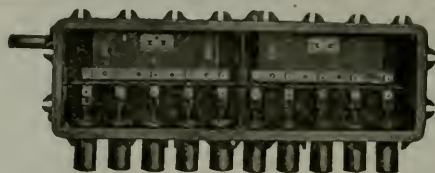
No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California



Type B-55, 5-way 250-volt Junction Box

PROTECT your electric cable systems by using **STANDARD Cable Accessories**, which include a complete line of indoor and outdoor cable terminals (Types D.S. and D.O.A.) and Davis Junction Boxes, etc.

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The Fulton Gas Pressure Governors FOR ARTIFICIAL OR NATURAL GAS

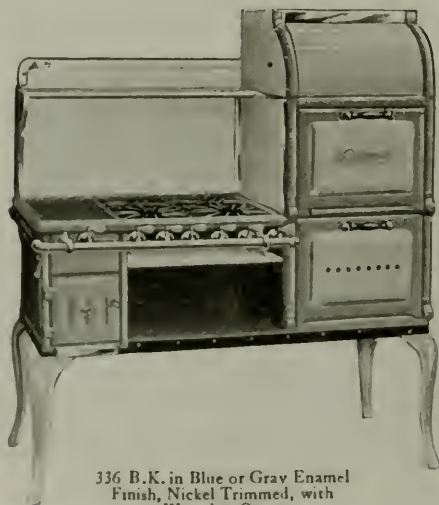
Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

The most simple and perfect governor ever placed on the market. See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

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336 B.K. in Blue or Gray Enamel
Finish, Nickel Trimmed, with
Warming Oven

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

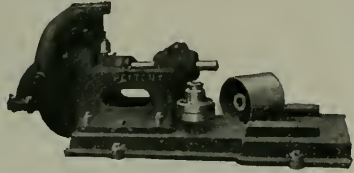
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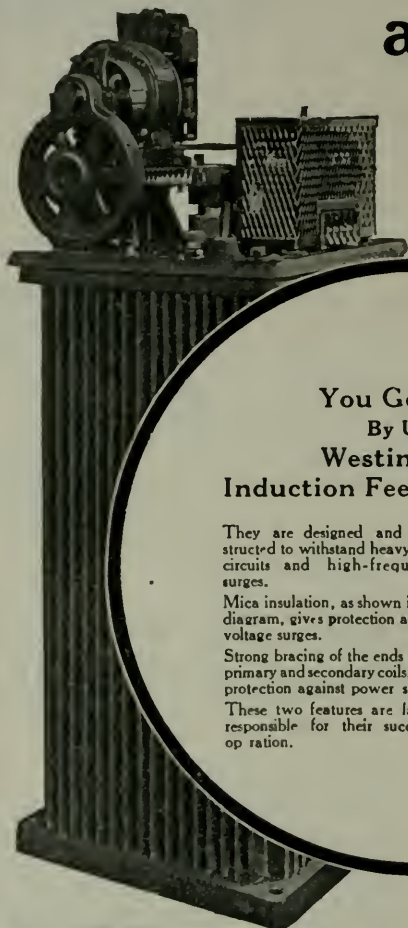
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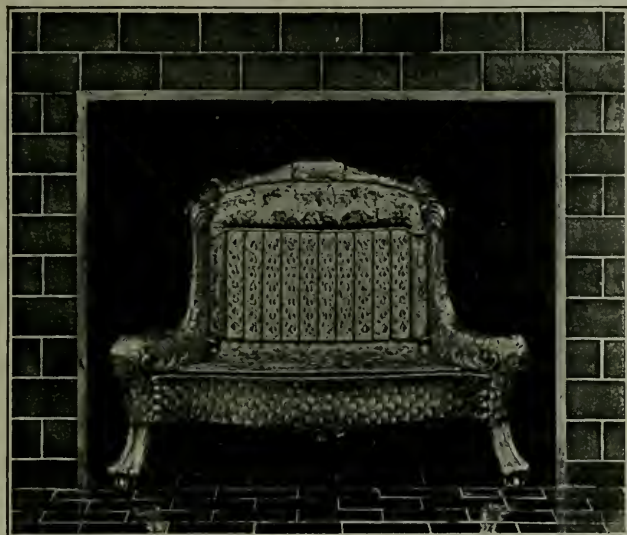
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CITIES AND TOWNS SERVED BY COMPANY

DIRECTLY			INDIRECTLY		TOTAL	
No.	POPULATION		No.	POPULATION	No.	POPULATION
Electricity	171	1,120,503	60	153,449	231	1,273,952
Gas	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic)	18	61,719	8	15,488	26	77,207
Railway	1	65,908	...	...	1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
Alameda	28,806	El Verano	400	Meridian	200	San Leandro	5,703
Albany	2,462	Emeryville	2,390	Millbrae	300	San Lorenzo	500
Alvarado	1,000	Escalon	600	Mills	400	San Martin	250
Alviso	517	Esparto	200	Mill Valley	2,554	San Mateo	5,979
Amador City	377	Fairfax	250	Milpitas	300	San Pablo	500
Anderson	500	Fairfield	1,008	Mission San .....	...	San Quentin	3,050
Angel Island	500	Fair Oaks	300	Modesto	500	San Rafael	5,512
Antioch	1,936	Fall River Mills	300	Monterey	9,241	Santa Clara	5,220
Aptos	300	Farmington	300	Mokelumne Hill	900	Santa Cruz	10,917
Arbuckle	900	Felton	300	Monterey	5,479	Santa Rosa	8,758
Atherton	500	Folsom	2,000	Morgan Hill	646	Saratoga	500
Auburn	2,289	Forestville	250	Mountain View	1,888	Sausalito	2,790
Barber	500	Fresno	45,086	Mt. Eden	200	Sebastopol	1,493
Belmont	375	Gilroy	2,862	Napa	6,757	Shasta	200
Belvedere	616	Glen Ellen	1,000	Nevada City	1,782	Shellville	200
Benicia	2,693	Gonzales	500	Newark	500	Sheridan	250
Ben Lomond	400	Grass Valley	4,006	Newcastle	750	Smartsville	300
Berkeley	56,036	Gridley	1,636	Newman	1,251	Soledad	400
Biggs	683	Grimes	500	Niles	1,000	Soquel	400
Bolinas	200	Groveland	500	Novato	400	Sonoma	801
Brentwood	400	Guerneville	800	Oakdale	1,745	Sonoma	1,684
Broderick	700	Hamilton City	250	Oakland	216,261	Sutter San .....	...
Burlingame	4,107	Hammonton	500	Oakley	200	Francisco	4,411
Byron	350	Hayward	3,487	Occidental	600	Standard	500
Campbell	600	Hercules	373	Orland	1,582	Stanford Uni-	2,700
Capitola	300	Hillsborough	931	Oroville	3,340	versity	40,296
Carmel	638	Hollister	2,781	Pacheco	300	Stockton	769
Cement	1,000	Honcut	500	Pacific Grove	2,974	Suisun	350
Centerville	1,000	Hughson	464	Palo Alto	5,900	Sunol	1,675
Ceres	637	Hayward	1,000	Paradise	500	Sunnyvale	250
Chico	9,339	Irrington	1,000	Patterson	694	Sutter City	920
Colfax	573	Jackson	1,601	Penn Grove	200	Sutter Creek	196
College City	250	Jamestown	750	Penryn	250	Tehama City	400
Collinsville	200	Kennett	464	Perkins	300	Tiburon	2,430
Colma	1,500	Kettlefield	500	Petaluma	6,226	Tracy	300
Columbia	200	Kenwood	300	Piedmont	4,282	Tres Pinos	1,500
Colusa	1,846	Kewick	200	Pike City	200	Tuolumne	3,394
Concord	912	King City	1,048	Pinole	967	Turlock	1,254
Cordelia	300	Knights Ferry	200	Pittsburg	4,715	Vacaville	21,107
Corning	1,449	Knights Land-	400	Pleasanton	991	Vallejo	300
Corte Madera	607	ing	200	Port Costa	900	Vina	200
Cotati	200	La Grange	200	Princeton	300	Vineburg	538
Cottonwood	500	Larkspur	612	Red Bluff	3,104	Walnut Creek	200
Coyote	200	Lathrop	600	Redding	2,962	Warm Springs	250
Crockett	1,500	Lewiston	200	Redwood City	4,020	Waterford	5,013
Crow's Landing	300	Lincoln	1,325	Richmond	16,843	Watsonville	435
Daly City	3,779	Live Stock	300	Rio Vista	1,104	Wheatland	650
Danville	400	Livermore	1,916	Ripon	500	Williams	2,190
Davenport	300	Lomita Park	600	Riverbank	200	Willows	903
Davis	939	Loomis	500	Rocklin	643	Winters	4,147
Decoto	300	Los Altos	500	Rodeo	300	Woodland	300
Del Monte	300	Los Gatos	2,317	Roseville	4,477	Yolo	350
Denair	200	Los Molinos	200	Ross	727	Yuba City	1,708
Dixon	926	Madison	300	Sacramento	65,908	Total Cities .....	...
Drytown	200	Manteca	1,286	Salinas	4,308	and Towns	1,347,844
Duncan's Mills	200	Mare Island	600	San Andreas	1,183	Add Suburban .....	...
Durham	250	Martinez	3,858	San Anselmo	2,475	Population	368,115
Dutch Flat	750	Marysville	5,401	San Bruno	1,562	Total Popula- .....	...
Eldridge	500	Maxwell	500	San Francisco	506,676	tion Served	1,715,959
El Cerrito	1,505	Mayfield	1,127	San Jose	39,642		
Elmira	350	Menlo Park	900	San Juan	350		

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 1—Gas only.
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 2—Gas, Elect. and St. Railways.
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The total installed capacity of its 28 Hydro-Electric plants aggregating 308,241 Horsepower is 30% of the total installed Hydro-Electric power in the State of California.

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Operates 4 Steam-Electric Plants.

Operates 20 Gas Plants.



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PACIFIC SERVICE MAGAZINE

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DRUM CAMP SNUGLING UNDER A QUILT OF WINTER'S FASHIONING

Vol.
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JANUARY 1922

No
8

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Pacific Service Magazine

Volume XIII



Number 8

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Winter scenes in the Sierra Nevada section of our "Pacific Service" territory. Reading left to right, from the top down, these views show: (1) Yuba river, at Cisco; (2) Soda Springs; (3) Ed. Roening at Lake Van Norden; (4) Yuba river below Lake Van Norden; (5) Bridge across the Yuba on Lake Fordyce trail; (6) South Yuba flume; (7) The same below Spaulding; (8) South Yuba flume in Bear Valley.

Two Brave Men

By J. M. DICKEY, Engineer Gas Generation, San Francisco Division

The evening of January 9 Engineers D. M. Nicholas and Frank Monahan were on duty in the compressor room at Potrero Station. The peak hour load, between 5:00 and 6:00 p. m., was on and all the "boosting" machinery was sending out the maximum. At that time everyone is using gas and the plant pressures are carried high enough so that the people living out in the Richmond and Sunset districts may receive the same service as those in the downtown district, near the plants.

It became necessary at 5:10 o'clock to change from a steam driven low-pressure booster to one which is electric motor driven. Monahan was opening the discharge valve on the motor unit and Nicholas was closing the corresponding valve on the steam unit. Just as Nicholas made the last turn on his valve the fan in the steam driven booster burst while turning at a speed of something over one thousand revolutions a minute. The pieces were hurled through the steel case of the booster, a spark was struck, exploding and igniting the gas, which blazed through the wrecked booster up to the roof, filling the whole room with fire and smoke, the smoke caused by the burning oil from the lubricating system of the wrecked booster.

Fortunately for both men, Monahan is a fresh air fanatic. The first thing he does when coming on duty is to open wide the sliding door on the west side of the building. The explosion lifted both men off their feet and blew them through this open door and clear of immediate danger. Their first thought was to close all valves on lines leading into the building. It was impossible to go back through the west door on account of the flames, so they ran around to the north door. Just outside the building, at this point, they attempted to close a valve on

the 30-inch line leading from the one million holder, but falling glass from a large window above their heads drove them away from there. Monahan then ran to the top of a bank of purifiers alongside the building to close a valve on a steam line so that the engine which had been driving the wrecked booster would not run away if the governor failed and cause another wreck. While he was at this steam valve the window in front of him burst and he was again driven away by the flames. Nicholas then started for Station "A" and Monahan for the fire alarm. When Monahan came back he found Nicholas rolling in a puddle of mud in effort to extinguish his clothing, which had started to blaze when he ran to Station "A."

They then ran to the south door and after putting a wet handkerchief over his mouth, Monahan went in and shut the discharge valves on the three compressors which he could reach. This in order to prevent high pressure gas coming back to feed the flames in case of a broken line. The power had been shut off by this time and all the compressors had stopped.

From the building they ran to the outlet valves of the five million holder; with scorched and burning hands and Nicholas' clothes still smouldering in spots they started to close the 36-inch valves. By this time some of the rest of us had arrived and the work of closing all valves around the building was accomplished as quickly as possible.

It was with a great deal of difficulty that Nicholas was persuaded to go to the hospital and have his burns attended to. He wanted to stay as long as there was anything to be done. Monahan stayed on the job until after midnight; as he had escaped without injury he could see no reason why he should go

home until his regular time. He not only stayed but he worked and helped until finally persuaded to leave.

A star reporter should be assigned the task of writing the story of these two men, what they did and what they tried to do. From the instant they were blown out the door until the rest of us arrived was less than five minutes. It takes a long time to tell it, but the reader can imagine their quick thinking, followed by quick actions, when it is realized how much they accomplished in so short a space of time. Never a thought of themselves, only knowing what there was to do and trying their best to do it. It is doubtful if they gave more than a passing thought to the danger of suffocation and further explosions. But

realizing the danger as they always subconsciously know it from the nature of their work, all the more credit to them for bravely going ahead in spite of this knowledge.

How simple it would have been for these two men to race to the fire alarm box, turn in an alarm and then stand at a safe distance and watch the flames eat their way through the building. But the men of "Pacific Service" are not of that caliber. Service is defined as "Any work performed for the benefit of another;" duty, as "The obligation to do that which is prescribed or required, especially by the moral law." How courageously these two men exemplified the true meaning of Service and Duty.

Duty First In "Pacific Service"

The big southeaster that struck the coast section of central California Christmas day seems to have started in Monterey county and to have worked its way northward, carrying everything before it until it expended its vicious force in the Sacramento valley, south of the capital city.

The most serious damage was done to the telephone and electric power services in the districts affected, both being put out of commission. It was here that "service" at its best came to the front. On account of the holiday many linemen had been given permission to spend Christmas with their families; moreover, all means of communication having been cut off, they could not be reached by telephone. It is worthy of record that those very men of their own accord made their way by any and all means of transportation available to their respective stations and entered upon the work of service repairing without an instant's delay.

"Pacific Service," whose lines cover the territory hardest hit by the storm, reports a record of 100 per cent fidelity in this respect. Besides, the work was not confined to linemen alone, for, all the trouble being out of doors, the company

had volunteers from all its departments where labor is employed.

In San Francisco 175 poles and 10 miles of wire were down before the wind had been blowing an hour, and all the arc circuits were out of commission. Yet the repair crews went to work with such a will that by nightfall the city was in fair shape so far as service to consumers was concerned. In Oakland and vicinity nearly 200 poles were blown over and between 400 and 500 street lights blown out. Other places hit hard were San Rafael, San Jose, Napa, Vallejo, San Mateo and surrounding territories. From all quarters concerned the report is one of unselfish devotion in the cause of service. In certain parts of the "Pacific Service" territory men worked anywhere from 12 to 36 hours, with interruption only for meals. Many ate their Christmas dinners out of lunch boxes brought to their stations by their wives.

The greater damage was done before noon on Christmas day, although the rain and wind continued, albeit in modified degree, almost constantly until early Tuesday. Our company officials are glad to report that in spite of the danger to the men there were but few accidents and those of comparatively slight nature.

"Pacific Service" in the Pages of History-- The Thompkins House in Bear Valley

By RUDOLPH W. VAN NORDEN

The road from Emigrant Gap to Lake Spaulding takes one over the ridge which separates the American and Bear River watersheds. Where the road turns to descend after crossing a narrow saddle in the ridge, the traveler, unless he be utterly devoid of an appreciation of the sublime in nature, will stop and linger for a few moments over the panorama which is unfolded before him. This turn in the road has long been called "Inspiration Point," and it is well named. Stretching away mile upon mile are the stark granite walls of the peaks and ridges which tower above the South Yuba River and of the gorge through which it flows. In contrast to the relentless grandeur of this background lies Bear Valley, almost a thousand feet lower, a vision of pastoral loveliness. Emerging from the forest in the valley far below, the road, after crossing Bear River, which appears as a mere silver thread in its meanders through the lush meadow, can be traced for a mile or more, only to be lost again in the forest beyond. Just before the road disappears it passes behind a large rambling barn and on the other side extending back into the dense deep green undergrowth of the mountain, is a group of oaks and a straggling orchard. A small cabin seems to be out of place in this setting. There is no particular attractiveness to this spot now, and one might drive past time and

again without giving it any special attention. But if one should chance to stop at the cabin he may notice round about it, if he observe closely, buried under rank grass and rose bushes, the ruins of old foundations. And this is the spot where the Thompkins House stood.

The Thompkins House was the scene of many an interesting event. Few there are now remaining who can visualize in memory this famous old place of the stage coach days, but those who can reach back to the seventies and early eighties can tell of events associated with the mad rush for gold, of entertainment not to be forgotten, or, perhaps, of near tragedy, all of which is interwoven with the romantic history of Nevada County.

The Bear Valley ranch was located by Elisha Thompkins and patented by him in 1872, and it was he who built the hotel which bore his name. The Thompkins House was an important link in the stage journey between Nevada City and Virginia City, as it was an over-night stopping place on the route through Bear



The Thompkins House in Bear Valley, famous in the old staging days.

Valley, which was heavily traveled for a number of years following the discovery of the Comstock Lode.

The house was well built and furnished. In the large parlor at the west end was the conventional hair-cloth furniture, the marble-topped table with its cluster of variegated wax flowers under a glass dome, the homespun carpet and the curious lace curtains of the time. There was also a big fireplace. At the east end was the barroom, its high bar worn to a slanting smoothness along the front and its wrought-iron rail irregularly flattened by the scrape of many boots. This bar upheld a "reputation." The dining room in the rear would seat about forty, and I have been told that the house was famous far beyond the county limits for its excellent table and for the all-night parties to which the youth and beauty from Nevada City and Grass Valley made the long trip on not infrequent occasions. The ballroom was in the attic. This was neatly finished and the floor was perfect. At one end was a slightly raised platform for the music, the latter of which generally consisted of a fiddle and a guitar, and perhaps an accordion or a harmonica.

The Bear Valley ranch never amounted to much as an income producer. There was a small apple orchard and sporadic attempts were made toward raising farm produce, but the acreage was not large and at best furnished pasturage and winter feed for cattle.

Stage travel gradually lessened and was eventually discontinued in the late seventies, the railroad affording more rapid and convenient transportation. But the old house was kept open as a wayside resort and stopping place and through the summer and early fall was a haven for vacationists and sportsmen. Elisha Thompkins finally sold the ranch at a sacrifice to Jim Davis for five thousand dollars.

For a number of years prior to 1890 it was the earnest desire of John Spaulding, manager of the South Yuba Water Company, that this property be acquired for the purpose of creating storage reservoirs. The Nevada flume, now known as the "South Yuba Canal," follows the contour of the north edge of the valley. The company owned the right of way for this canal, but had been unable to make any

satisfactory arrangements with Jim Davis, who was then the owner, for the purchase of the property. In 1891, through the efforts of Wm. Nicholls, the banker at Dutch Flat, acting for the company, an agreement was arrived at with Davis for the sale of one thousand acres in Bear Valley, including the buildings, and also for a similar acreage in the lower part of the county, for the sum of fifteen thousand dollars. A part of this money was paid and the company took possession. Two years later, in 1893, payment was completed.

The company's occupation lasted for about three years, and the house was used not only as a sort of company headquarters for the upper part of the water system, but was also occupied during the summers by officials and their families. It was a rendezvous which made a big family of the entire company organization. But its occupancy was destined for a sudden end, for on or about September 10, 1894, around 3 o'clock in the morning, fire broke out in the roof at the east gable, probably having been communicated from a defective chimney, and within fifteen minutes the fine old building, dry as tinder, had been completely consumed.

By the middle of September the evenings are often chilly in Bear Valley, and this was the case at the time the house burned. During the preceding evening there was a roaring fire in the big fireplace in what had formerly been the barroom. Gathered around it were my mother, my brother Max, Mrs. Keeler, the cook, "Old Taylor" (that was what "Uncle" John Spaulding called him, I never knew his full name), the man who had charge of the ranch, and his dog "Teeny." My father and I had left Bear Valley that afternoon bound for Auburn. We were driving and stopped over night at Colfax. While the group before the fireplace was watching the play of the flames, my mother remarked that she felt a strong presentiment of fire in the house catching from the chimney. For some time this became the subject of conversation, and finally, when about to retire, so strong was her fear that the fire was quenched and the house was examined inside and out for any evidences. Several hours later Mrs. Keeler, who occupied the rear room at the east end,

was awakened by smoke and the crackle of flames and she rushed down the hall waking the others. Without the formality of dressing all safely escaped from the house and my brother managed to drag my mother's trunk downstairs, getting it outside just as the roof fell in. Nothing else was saved and little Teeney, the dog, was seen to run back into the barroom, Taylor after him. Taylor was dragged out overcome by smoke, but Teeney was never seen again.

The view of the old place shown here was taken in the spring of 1892 or 1893. The man in the foreground standing by the fence is W. F. Englebright, who was superintendent of the Nevada Division of

the water company. Standing next the corner column on the porch of the house is John Spaulding. Old Taylor is seen leaning against the second column. The other two I do not recognize. The flume of the South Yuba Canal can be seen in the background at the rear of the orchard.

The old house has been gone many years, but the memories of a past filled with romance linger. The valley is the same charming spot that it always has been. Perhaps, some day, a new house may take the place of the old where the joy of living to a new generation may be as fully realized as it was in the days when the old fiddler sang out the figures for the quadrille, long before the age of jazz.



In the Beginnings of "Pacific Service"

Early Stages of Hydro-Electric Development in North-Central California

By JOHN MARTIN

(Continued from our December Issue)

In the preceding article I made reference to the fact that the first 60,000-volt transmission line was built for the Standard Electric Company, of which Prince Poniatowski and Mr. W. H. Crocker were the largest owners. I wish to re-recite an experience I had at the factory of the Stanley Electric Manufacturing Company of Pittsfield, Mass., whose agent I was when the first developments on the Yuba were made.

In 1899, at which time we were considering long distance transmission, the chief engineer of that company was Mr. C. C. Chesney and the consulting engineer was Mr. John F. Kelly. In discussing the question of high voltage with these gentlemen, I found Mr. Kelly more advanced in his ideas than Mr.

Chesney; in fact, the former assured me that they would have no trouble in guaranteeing a transmission of 60,000 volts. Mr. Chesney's opinion was that we should limit our efforts at that time to 30,000 volts. As their offices were adjacent I brought the two gentlemen together and I said:

"Mr. Kelly, Mr. Chesney says that we should not undertake any development of higher potential than 30,000



John Martin at the cottage of the first Yuba power development. Photo taken March 25th, 1898.

volts." Mr. Chesney spoke up and said: "Mr. Kelly, the only doubt that I have in my mind in regard to the 60,000-volt transmission which you suggest is the question of line insulation; we will have no trouble with our generators or transformers, but I am afraid of the insulators." Mr. Kelly said: "Why, Chesney, all you have to do is to take a few dinner plates and suspend one below the other and get enough surface creepage on the porcelain to give you proper insulation from the ground." This simple suggestion on the part of Mr. Kelly was put in actual practice some eight or ten years later and is in common practice to-day.

When the plans of transmission from Colgate to Oakland were under consideration by the financial people, the question was raised as to the method to be adopted in the crossing of Car-

quinez Straits, whether the lines shall be carried overhead or under water. I was enabled to obtain from the office of the Secretary of War a report previously made to him by a commission of army engineers as to the maximum safe span for a suspension bridge, and this report specified about 2,800 feet.

The water line at the straits was 2,645 feet and we determined to erect towers on both hillsides, thereby eliminating the less economic method of submerged cables, which would have necessitated the use of step-down and step-up transformers and their continued loss of more than $4\frac{1}{2}$ per cent of the power transmitted.

After the financial negotiations were concluded I started on a trip east with Mrs. Martin and my daughter, and I received a telegram from Mr. Ed Rollins at Denver, requesting me to stop there en route, as he desired to consult with me on a very important matter. We were met at the Denver station by Mr. Rollins and after greeting us he said to me, "John, how are you going to keep those wires from swinging together?" My prompt reply was illustrated by raising my right hand vertically and extending my fingers as I said, "Just like this." With a slight grin on his face, he answered:

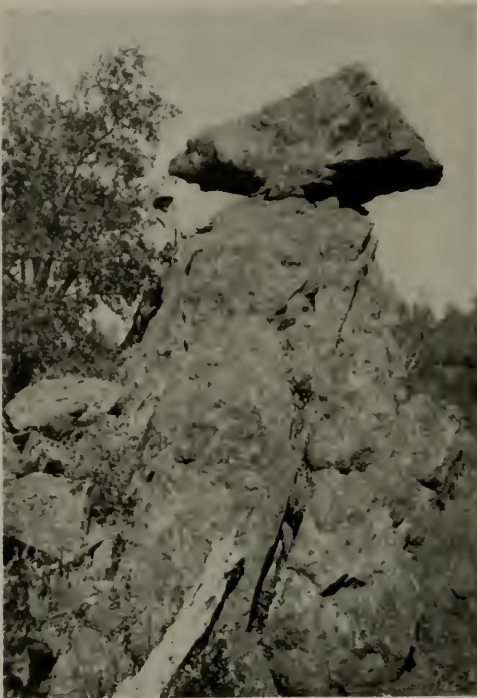
"Oh! I thought they would be horizontal," and the remaining $23\frac{3}{4}$ hours were devoted to our entertainment.

The main lines of the Standard Electric and Bay Counties Power Companies were installed with aluminum wire. The rea-

son why aluminum was used very generally in these more recent developments was simply a matter of financial economy. Forty-seven pounds of aluminum is equivalent in conductivity to 100 pounds of copper, although, with the same carrying capacity, the cross section of aluminum is 63 per cent greater than copper. And when aluminum was selling at not more than twice the price of copper, it was cheaper to buy it for transmission purposes than to use copper. But during the war, when the price of aluminum became much greater, such concerns as Pacific Gas & Electric Company and what was formerly the North



The Colgate flume tender's cabin.



Mr. Colgate by the Balancing Rock, a freak of nature near Colgate head dam.

Shore Railroad Company and is now known as the Northwestern Pacific, and some others, removed the aluminum wire from their poles, or, in the case of the North Shore, the rods as a feeder on their third rail; and in so doing, after paying for the cost of removal and re-installation of copper, they made profits or reductions in their capital investment. When we first started to use aluminum it was selling at \$5 a pound; then it sold down to 75 cents.

The weight of aluminum on the poles is less than that of copper; consequently, it has less effect on bends on pole lines. But on tower construction, this condition was not met. We use steel cable in our tower crossing at Carquinez Straits, and it takes from 8 to 12 pounds of iron to equal one pound of copper, according to the analysis of the iron, to gain the same relative conductivity.

So far as transformers are concerned, in the installation of various sub-stations

along the line in long distance transmission the delivered potential or voltage necessarily will vary, owing to varying resistance offered by the wire at respective distances, and it is essential that the operator in charge of each sub-station should be in a position to control the voltage of delivery to his consumers without reference or application to generating sources. In consequence of that, the step-down transformers in sub-stations were designed with taps taken from different coils in the transformer, which, by means of a regulator head placed on the outside of the transformer, or on the switchboard, enabled the operator to increase or decrease the voltage delivered to his district within a range of 10 per cent above or below the normal voltage furnished over the line, without incurring any disturbance of any kind or anything detrimental to the successful operation of the current at any other place.

This type of regulation was used initially in the two-phase generators built by the Stanley Company for station use where power and lighting were supplied from the same unit, for the reason that in connecting up lighting loads on different circuits it is impossible to pre-determine the consumption of the user, and that control was independently handled at the generating station by the operator in case he found either phase carrying more load than the other.

In the course of time the installation of larger generating units than those which were installed in the early hydro-electric developments I have written of necessitated the construction of transformers of larger capacity. No engineering difficulties, however, were encountered in this, so far as I am aware.

In reciting the development of hydro-electric transmission it might be assumed that there was very little time for anything but hard work, but I always man-

aged to enjoy my work even when laboring many hours each day.

When I was building the Colgate power house I invited three guests to join me in a tour of inspection. They were Captain J. H. Bennett, then port captain of the Pacific Coast Steamship Company, Mr. Lindsay Scrutton, a mining engineer, and Mr. Thomas J. Barbour, then of the Risdon Iron Works. We started from Marysville by team and reached the foot of Stanfield Hill, about 20 miles from there, in time for luncheon. At this point there was a ranch house and barn, and it was a place where the teamsters would put up their teams and stop over night in hauling material to Colgate; and while it was not a hotel in the ordinary sense, the food was good and the beds were comfortable and clean.

This place was operated by a Mrs. John Stewart, and at that time she had a sister visiting her whose husband was a caretaker at an old abandoned hydraulic mine on the South Yuba River, some 30 miles from this place. This sister acted as waitress and when serving the meal, Captain Bennett said to her: "Don't you find it very lonesome here?" To which she replied: "Why, no; it's very lively, lots of teaming." This became the slogan of our trip.

We departed from the Stewart ranch and climbing into the mountains had our dinner at Dobbins ranch, where the hotel was administrated by a Mrs. Merri-man and the cuisine was very satisfactory. We started after dark and reached the head of the Chute Camp trail about 10 o'clock that night, at which place we had some men, including Charley Armstrong, superintendent of our flume construction, for the purpose of carrying our baggage down to the Chute Camp, where we stopped that night.

During the building of the first flume in the Browns Valley Irrigation District a sawmill was located near the head

of this ravine and the lumber was floated through in a V-shaped flume. Hence the name, Chute Camp.

After progressing a few hundred yards, Tom Barbour asked his assistant, "How far is it down?" and the reply was, "Mr. Barbour, it is less than half a mile down but it is more than five miles up."

Arriving at the camp, the bunkhouse was known as "Rattlesnake Inn" and the foreman of the camp conceived the idea of having a snake museum on one side of the building, boxed with glass sides. The next morning after breakfast we walked a mile and a half upstream on the flume to the suspension bridge, which is located about 100 yards below the diverting dam. This suspension bridge was used to lower the lumber to the flume from the other side of the river by means of a gravity tramway, as we preferred to lower it down in this manner and avoid the customary damage of shooting it down through a V-shaped flume.



John Martin and R. R. Colgate on the flume.



Bill Slingsby of Dobbin's Ranch.

We ascended the hill to the head of the tramway, where we were met by a thoroughbrace stage and four horses, driven by Billy Meek, who operated a store at Camptonville and was superintendent of our sawmill which we had erected at Slate Range. Billy was an expert whip and we drove from there to the sawmill through Garden Valley, a total distance of 9 miles. This trip was taken in the month of August and the sun in the river canyon in that month is particularly warm. Then the roads were deep with dust on account of the immense amount of traffic over them at the time, due to our construction work. So it was some trip.

After lunch at the sawmill, we started to Camptonville, some 8 or 10 miles distant. En route we stopped at Ramm's ranch (the early home of Father Ramm of San Francisco) and at this ranch there was a winery located alongside of the road which extended downhill several hundred yards; the road was fenced on both sides and the end of the road had a cross fence. I remarked to Mr. Meek, "Give them a touch of high life," and

with that he cracked his whip and started the horses on a gallop. Captain Bennett being seated next to the driver and observing the cross fence immediately below, yelled at the driver, "Hard a-port; hard a-port." The command was unnecessary, because the only way that the stage could turn round was on two wheels, which was successfully done by Billy Meek in a very expert manner.

On the way to Camptonville, I remarked to Tom Barbour that the man who owned the hotel and operated the saloon there was named Bill Mayo, and that he was the stingiest man in seven counties and when he went there that he wanted to get his money's worth. As a matter of fact, Mr. Mayo was absolutely the antithesis of my description.

The next morning after breakfast we departed for Nevada City, crossing the Middle Yuba River at Freeman's Crossing and the South Yuba at Purden's Bridge, reaching Nevada City in time to take the train for Colfax, where we arrived about 9 o'clock.

The train we were to take would not depart from Colfax until 3 a. m. We were sitting on the porch of the hotel when we heard the whistle of a train. One of our party went over to the depot and ascertained that it was a belated overland and would arrive in ten minutes on its way to San Francisco. We all gathered our baggage and boarded the train and, much to our surprise and incidentally to our pleasure, an opera company was aboard the train, including Mademoiselle Fritz Scheff, who was acquainted with Mr. Barbour. We had a pleasant time in the observation car until we retired for the night.

Another very interesting story in connection with our development is an experience we enjoyed when the engineers and experts for Messrs. Harris & Company and Rollins and Sons made a trip over our plants to see our physical and

practical condition in regard to the possibility of transmitting power to Oakland. They started at Nevada City, and there they were entertained by Mr. de Sabla at the gas plant, next to which was a cottage where we would sleep and eat when in that vicinity. Mr. de Sabla prided himself on his wonderful Chinese cook and took great care to impress these people with the fact that the only good meal that they would have on that trip was the one that they were going to have cooked by him. Now, in anticipation of their arrival at Colgate, and the fact that they would have to sleep and dine the next morning at the Merriam Hotel at Dobbins ranch, I had instructed Mrs. Merriam to have some turkeys for dinner and chickens for breakfast. Accordingly, after their trip to the Rome power house our visitors were driven to Colgate and reached the Merriam Hotel that evening. The turkeys served were dressed in the old-fashioned style and were so delicious that everyone in the party had three helpings. Then, the wonderful broilers they had for breakfast made a

veritable climax to our entertainment at the Merriam Hotel.

Mr. de Sabla was subjected to considerable ridicule for his boastful statement in Nevada City. He finally said to me, "Martin, it was a darned mean trick you played on me, but I have to stand for it." Personally, I really believe that Mrs. Merriam's cooking was better than the Chink's.

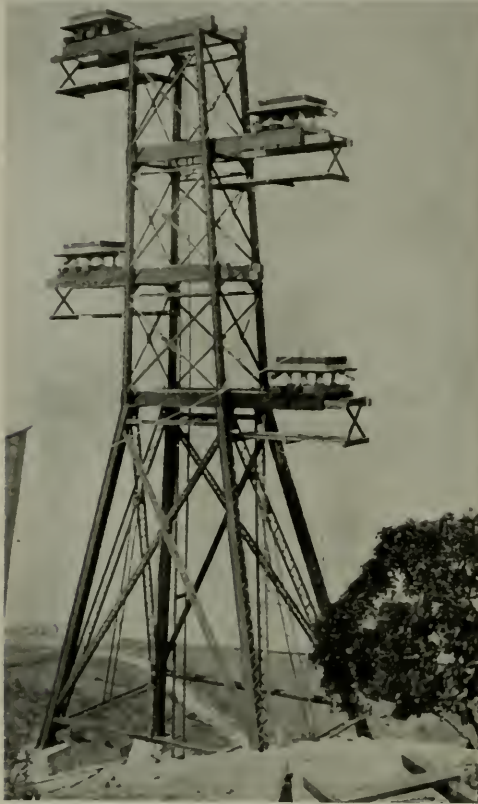
In the party was a gentleman by the name of Coffin, of Perry, Coffin & Burr, of Boston, Mass.; and when the two of us were ascending the pipe-line hill at Colgate, he stopped in his ascent and said to me, "Martin, I want to take off my hat to you and your friends, and tell you that it is a pity that men of your ability have not been discovered by Mr. Coffin of the General Electric Company so you could co-operate with him." To which I replied, "Well, we were fortunate enough to have our own financial friends in California who had confidence in our ability to succeed and finance our enterprise."

As a matter of fact, we did not receive



View of Colgate power house, showing, also, the famous boarding house named after John Martin.

any financial help from Wall Street until the final consolidation which resulted in the organization of the Pacific Gas &



The first South Tower, above Carquinez Straits.

Electric Company, except such financing as was done with Mr. Colgate and a few of his friends.

Speaking of the first Yuba project, Mr. Colgate made a visit to me while I was constructing this plant and, in driving

from Marysville to the power house, he discussed affairs in general, and this project in particular, and I recall his saying to me that it gave him more pleasure and satisfaction to assist in the development of the country than he could possibly derive from the financial gain resulting therefrom. In other words, he said he enjoyed trying to make two blades of grass grow where only one grew before.

In retrospection, I wish to say that the question of the public service was uppermost in the minds of those who were pioneers in the development of this hydro-electric power transmission and distribution. When I was president of the California Central Gas & Electric Company my orders to the local managers were to apply all their energies to the satisfactory service of our customers and not seek any new business as long as we had any dissatisfied old business. Those were the days before the Railroad Commission was created in California, and we were imbued at the time with the idea that our patrons were the ones from whom we obtained our revenues and profits and that they were entitled to satisfactory service in order that our interests might prosper.

It is a pleasure to note the continuance of this policy of "Service First," as evidenced by the wonderful work being done by the Pacific Gas & Electric Company at this time and for many years past.



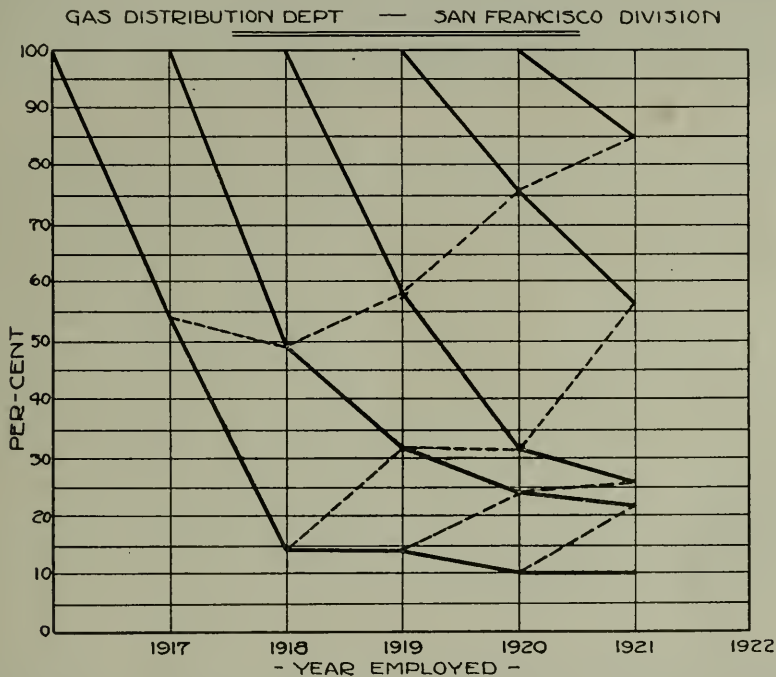
Labor Turn-over Shows Improved Conditions

By E. G. CAMPBELL, Gas Distribution Department, San Francisco Division.

The turn-over of labor is, and has been, a thorn in the side of the employer for years. Enormous sums have been lost annually by large manufacturers in making replacements and getting new

selected with careful precision, having the view always in mind of developing them into permanent gas men.

The comparisons in the curve on the accompanying chart tell the good results



employees up to the required standard of efficiency. It has become such a menace that bureaus of research have been organized and scientific methods are now being used in the hiring of labor to remedy this condition.

The present showing in the gas distribution department, San Francisco division, of our company affords a striking illustration of what is being accomplished. Here the labor turn-over is being rapidly reduced to a minimum. The applicants for mechanical jobs are interviewed and

obtained by our present methods, enhanced by the satisfactory working conditions that are now in vogue. The solid line represents percentages of men remaining each year after employment. Thus, of the men hired in 1917, 54 per cent remained at the end of the first year, 14 per cent at the end of the second year. The broken line represents percentages of men remaining after equal lengths of service, the top line after one year of service, the next lower after two years, and so on.

An Important Link in the Service Chain; Additions to Newark Substation

By M. C. McKAY, Assistant Engineer of General Construction.

Newark substation, which is located on the east side of San Francisco bay thirty miles south of Oakland, was designed as a transformer and switching station to distribute power from Drum, Halsey and Wise power houses to the southern portion of our territory. It is one of the most important substations included in the "Pacific Service" network of high voltage transmission lines bringing the hydro-electric energy of the Sierra Nevada mountains into the cities and territory of the bay region.

As originally planned Wise No. 1 and No. 2 lines at 100,000 volts and Electra line at 60,000 volts were to be the main feeders to this plant, with three 60,000-volt lines, Standard No. 1, No. 2 and Oakland, and three 11,000-volt local distribution lines, Alvarado, Centerville and Niles, distributing the energy received. This necessitated the installation of the following equipment:

Two banks of three 100,000-volt auto transformers, with one spare, the capacity of each being 12,500 K. V. A. and a total of 72,000 K. V. A.

Two 100,000-volt switch structures, with oil circuit breakers.

One 60,000-volt double bus structure of 7 circuits, with potential transformers.

Seven 60,000-volt switch structures with oil circuit breakers.

A reinforced concrete substation building for housing the remote control apparatus and 11,000-volt feeder switches and bus.

Four cottages for housing the operating force.

Work on the initial installation commenced in the summer of 1919, and in June, 1920, the first power was being handled through the plant. At this time Wise No. 2 line fed transformer bank No. 2 with all other apparatus on temporary structures, the substation building being a small wood shack housing the meter equipment and manually operated remote control switches. The plant was operated under these adverse conditions until January 1st, 1921, when the operating department moved into the new substation building and power put on the permanent 60,000 and 11,000 volt buses. As transformer bank No. 1 had not been installed a temporary connection was made between Wise No. 1 line and transformer bank No. 2.

A few weeks previous to this it had been decided to place a 450 K. V. A. automatic regulator on the local distribution lines in order to give local consumers a practically constant voltage. The installa-



Newark substation, looking northeast. Control building in foreground.



Newark substation, looking southeast. Transformers in the foreground.

tion of this apparatus was not completed until the early part of August, 1921; and although it came too late for the heavy summer irrigation load, the results obtained were all that were expected.

In order to further develop and maintain "Pacific Service" and to take care of the ever increasing load, work was started in the latter part of August last on additions and changes to the present station. The present Oakland line will be boosted from 60,000 to 100,000 volts and a second circuit strung. These will be connected to Wise No. 1 and No. 2 lines through a 100,000-volt seven-circuit double bus and additional switch structures.

The 60,000-volt double bus, now in operation, will be extended to take two additional circuits. One of these positions will be connected to San Francisco line No. 2 through a 60 K. V. switch structure and San Francisco line No. 1 will take the position now occupied by the Oakland line.

A third transformer bank 60,000-11,000 volts of 4,500 K. V. A. capacity will receive power from the second additional position on the 60,000-volt bus through a switch structure. This bank will feed the three local 11,000-volt distribution lines, which are now connected to transformer bank No. 2.

The completion of the 100,000-volt

transformer bank No. 1, which has been delayed due to a temporary use of the transformers at Bay Shore, is to be accomplished at this time. Both banks No. 1 and No. 2 will be connected to the new 100,000-volt bus.

An addition is to be made to the present substation building which will house two synchronous condensers of 12,500 K. V. A. capacity each and a 40-ton traveling crane. It is to be of steel frame and reinforced concrete construction and of the same architecture as the present one. The condensers will receive power from the 11,000-volt windings of the transformers in banks No. 1 and No. 2 and are to be used for regulating the voltage of the power received, obtaining more economical transmission and distribution.

This additional equipment will necessitate working two men on a shift. In order to take care of the increased operating force, three more modern four-room cottages will be built.

The foregoing is but a brief description of the first large high tension outdoor substation designed by our engineers. Many of the designs were new, particularly those of outdoor structures, but use has proven their effectiveness and value in the development of electrical engineering, a value that cannot be overestimated.

The Financial Side of "Pacific Service"

Owing to necessary year-end adjustments in our accounts which are customary at this season, statements of earnings for December and for the year 1921 do not appear in this issue but will be published in some later number.

DIRECT SALES OF FIRST PREFERRED NOW EXCEED \$26,000,000

When this Company, almost eight years ago, by offering its first preferred stock direct to its customers and employees, "blazed a new trail in the jungle of finance," to quote the words of a financial writer at that time, it was hardly to be anticipated, by even the most enthusiastic supporters of the plan, that it would be so generally adopted by the public utilities of the United States that in a very few years well over one hundred million dollars of new capital would be raised by this method; and that this one Company alone, in the short space of less than 2,300 working days, would dispose of upwards of \$26,000,000 worth of stock. Yet this is what has been accomplished, the \$26,000,000 mark being passed on January 6th, 1922. Since the initiation of the plan on June 3rd, 1914, sales each and every working day have averaged over \$11,300. These results are the more remarkable when it is remembered that during the war period the Company discontinued its efforts to sell stock and did not spend a single dollar for advertising from the time the United States entered the World War in April, 1917, until the latter part of October, 1920, or for a period of more than 3½ years. The following table gives, by years, the number of sales and par value of stock sold under the "public partnership" plan in the period from June 3rd, 1914, to January 13th, 1922:

Year	No. of Sales	Par Value of Stock Sold
1914.....	3,739	\$8,801,300
1915.....	1,712	3,785,100
1916.....	617	1,123,100
1917.....	650	890,000
1918.....	192	156,000
1919.....	52	35,900
1920.....	3,669	3,634,650
1921.....	6,399	7,491,550
1922 (to Jan. 13)....	163	150,400
Total.....	17,193	\$26,068,000

In the period covered by the above tabulation the Company's list of stockholders has grown from less than 3,000 to over 18,000, of whom upwards of 15,000 are residents of California. One of the noteworthy features of the Company's stock selling campaign is the remarkably low sales expense. In the period from June, 1914, to November, 1921, inclusive, the average selling cost per share for direct sales aggregating \$25,662,600 was only 89.1 cents; and during the last active campaign, in the interval from July, 1920, to November, 1921, inclusive, \$10,871,200 par value of stock was sold at an average cost of only 70.7 cents per share.

SOME FACTS ABOUT THE COMPANY'S FIELD OF OPERATIONS

The Pacific Gas and Electric Company, with its distribution lines extending into 36 counties of Northern and Central California, serves one of the most prosperous areas of the United States, with a prospective development unsurpassed by any section of the entire country. California ranks fifth among the States of the Union in the value and volume of farm products; it is fifth in banking resources,

fifth in the variety of its industries and eighth in the value of its manufactured products. In the ten years from 1910 to 1920 the State's crop value increased from \$146,500,000 to \$587,500,000, largely through the irrigation of previously arid areas, requiring a substantial utilization of electrical energy. The consumption of electricity on California farms is now greater than that on all the farms of all the remainder of the United States combined. These facts hold particular significance for the 50,000 holders of Pacific Gas and Electric Company's securities when it is recalled that the Company furnishes service of an essential nature to more than one-half of the State's population. In this connection, the San Francisco Chamber of Commerce has very recently compiled some statistics demonstrating that with respect to concentration of population, buying power of the people, pay rolls, manufacturing production, and financial strength measured in terms of savings deposits and banking resources, the region surrounding San Francisco Bay, which supplies a large portion of this Company's revenues, occupies an enviable position. A few figures culled from the Chamber's report are here quoted.

The per capita wealth of various cities based on actual value of property shows the following results, indicating the dominant position of San Francisco:

	Per Capita Wealth
San Francisco.....	\$3,371
Los Angeles.....	1,826
New York.....	783
Philadelphia.....	943
Chicago.....	1,821
Boston.....	1,002
Detroit.....	700
Cleveland.....	827
St. Louis.....	753
Washington.....	1,565
Milwaukee.....	758
Cincinnati.....	582

In proportion to its population more people in California have incomes of \$3,000 per year than in any other State. According to a recent report of the State Superintendent of Banks, 1,590,000 persons have savings accounts in California. This means that nearly one-half of the people of the State have savings accounts, as compared with an average of but one in ten for the United States as a whole.

The ratio of the amount of mortgages to the value of real estate also shows San Francisco in a very favorable position, as indicated by the following table:

	Per Cent of Real Estate Value Mortgaged
San Francisco.....	18
Baltimore.....	21
Pittsburg.....	22
St. Louis.....	28½
Boston.....	32
Detroit.....	39
New York.....	44
Cleveland.....	49
Chicago.....	51
Philadelphia.....	55
Buffalo.....	60

San Francisco and Oakland combined produce 54.1 per cent of the State's manufactured products.

While some of the above statistics relate merely to the City of San Francisco and the territory immediately adjacent thereto, they serve as an indication of the material prosperity of the Company's entire field of operations.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF THE
PACIFIC GAS AND ELECTRIC COMPANY

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The Pacific Gas and Electric Company desires to serve its patrons in the best possible manner. Any consumer not satisfied with his service will confer a favor upon the management by taking the matter up with the district office.

VOL. XIII JANUARY, 1922 No. 8

EDITORIAL

"The present system of private ownership under public regulation is logical, just, equitable and the best system of conducting the business of public utilities that has been or can be devised to meet the needs and requirements of both the utilities in question and the public by them served."

The foregoing is the decision of a special committee of the National Association of Railway and Public Utility Commissioners of the country, contained in a report presented at the annual convention of that body at Atlanta, Georgia. This report is the result of an investigation which was started in 1917 and has been in progress ever since. It is reasonable to believe that an inquiry lasting over five years was exhaustive and thorough and that its results are worth more than passing attention. The following abstract of the report may serve to acquaint our readers with the committee's line of reasoning in arriving at the decision quoted:

"Government is instituted among enlightened, civilized people in order to insure to the majority of the governed the greatest degree of freedom, liberty and happiness. There is no other sound reason or excuse for the existence of government,

if we grant the truth of the principle that all government derives its just powers from the consent of the governed.

"This granted, it is then no less true that a sound theory of government would dictate that there should be as little governmental interference with legitimate business activity as is consistent with the protection of the rights and property of the citizens and their enjoyment of life, liberty and the pursuit of happiness.

"We take it that these general principles are now but axiomatic. If these be the great basic truths that they are generally and universally conceded to be in this country, then it naturally and logically and inevitably follows, as a necessary conclusion, that the less governmental encroachment there is upon the domain of private business initiative and incentive, consistent with the fair and equitable protection of the rights of the majority of citizens, the more nearly does such government approach the real functions of sound government as laid down by our forefathers in the basic principles of the creation of our republic. It necessarily and logically further follows that government is then not instituted, as one of the ends of its creation, for the purpose of the ownership and operation of what are essentially and basically private businesses. Public utilities are essentially such, provided the public is given fair and adequate service at a reasonable cost. Public, governmental, regulatory bodies are created for this latter purpose only and can have no other reason for their existence at the expense of the public. However, the safeguarding of these essential rights of the people does make the existence of such bodies a real necessity.

"Again, a closer examination of the application of these general principles, we submit, but bears out the conclusion reached. In the ownership and operation of such utilities by government it is practically impossible to exclude the influence of politics. As long as human nature and self-interest is as it is, and before the coming of the dreamed-of Utopia or millennium, the subtle influence of politics would almost inevitably creep in, however ingenious the safeguards that might be thrown around it. Again, with every change of political

administration would come a change of business administration of such utilities, with its consequent change of business policy. This would be fatal to their operation under sound principles of economy and business efficiency."

The committee instances more than one experiment in what is called government ownership and operation. The two most notable examples given are those of the railroads of the country and the United States Emergency Fleet Corporation. The communistic regime in Russia is mentioned, the tramways of Glasgow and the English telephone service. Local instances are mentioned in the States of Washington, Arkansas and North Dakota. All classed as practical failures, with either a resultant increase in rate beyond the reasonable value of the service rendered, or the breaking down of the utility in question with a large proportion of its operating costs borne by taxation.

Elsewhere in its report the committee emphasizes the fact that public utilities, being subject to the same financial laws of operation as are private enterprises, must operate successfully and adequately in order to fulfill their duty to the public not only in the present but in the near future. For the past five years their revenue rates did not proportionately increase with their rapidly increasing costs of operation, it following that in order to maintain a just equitable balance and even to keep the utilities out of bankruptcy it is necessary to maintain their higher rates longer than would seem necessary to the layman judging from the surrounding decline in commodity prices.

Along similar lines is the report of the California State Railroad Commission to Governor Stephens for the past fiscal year, in which the Commission declares that the advance in utility rates during the war and reconstruction period was relatively smaller in comparison with soaring commodity prices. The following excerpt from the report gives detailed figures of significant importance:

"As nearly as can be determined the average increase in public utility rates was between 35 and 40 per cent. Figures compiled by the United States Labor Bureau show that retail prices at the beginning of 1921 were 172 as compared

with the base of 100 in 1913. Assuming no regulation of public utility rates had been in effect and that public utilities had increased their rates exactly on a parity with the increase in other commodity prices, they would have collected from the consumers \$495,500,000 instead of \$388,900,000 actually received from or allocated to California business. Through regulation by the Commission it may be said there was saved to the people of California a sum somewhere between \$88,700,000 and \$106,600,000 a year. Stated in other terms this indicates saving of an amount between \$25 and \$30 a year for every man, woman and child in California."

Upon the general subject of regulation the Commission declares that public utilities under public regulation are keeping rapid pace with the growth of the State, and that is especially true in the development by the power companies of the hydro-electric resources of California's mountain streams.

HONOR FOR MR. BRITTON

Mr. John A. Britton, our First Vice-President and General Manager, has been selected by Princeton University to deliver a lecture at the University on April 4th on the subject of "Pacific Coast Public Utility Development."

Mr. Britton enjoys the distinction of being singled out from the men of our western land to take part in a series of lectures provided for by the Cyrus Fogg Brackett Foundation, and will make the trip to Princeton especially for that purpose.

The lecture will deal largely with the engineering features of electric power generation, both steam and hydraulic, and will describe the leading characteristics of the high tension transmission and interconnecting systems in California. Combined with engineering details will be the romantic story of the development of hydro-electric power plants in California through the agency of the old-time reservoirs and ditches that were used in hydraulic mining during pioneer days. Mr. Britton proposes, also, under the broad subject of public utility development, to discuss the generation and distribution of gas.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION

The first meeting of the year of the Executive Committee of our association was held on January 17th. Matters of much importance were gone into and as a result our association is offering more benefits and opportunities to its members than ever before. Reports of the various committee chairmen show the splendid growth made during the past year, both in membership and in the scope of activities. It can, of course, readily be seen that as the association grows in strength its members will benefit accordingly.

It will be of a great deal of interest to members to learn that the death benefit plan has been enlarged, there being now two classes of benefits incorporated in this plan, namely:

- (A) The sum of four hundred (\$400) dollars will be paid if the deceased was a member of the association in good standing during the two calendar years immediately preceding the year in which death occurred.
- (B) The sum of three hundred (\$300) dollars will be paid in cases not provided for in paragraph (A).

Fourteen death benefits were paid up to the first of 1922.

The report of the educational committee was especially pleasing. It showed 1,106 enrollments in our various courses, 192 copies of the steam course having been distributed to date. The electrical course will be ready for distribution about January 31st, an order for 500 copies having been placed with the printer.

It is very gratifying to note the increasing interest that is being taken in the educational activities of our association.

At this time of the year all sections are busy with their organization and plans for the new year. It is an opportune time, however, to recall that it is just a year since the plan of sectional organization was inaugurated and its success has indeed been gratifying to all members.

The reports from the chairmen of each section show the growth made during the past year and achievements accomplished, and that 1922 bids for greater things goes without saying.

The recreational activities in the various sections was given considerable discussion. Mr. Walter D. Skinner, chairman of the committee in charge, is devoting a great deal of attention to these matters. This work includes the operation of the vacation camps which are located on property belonging to the company. The vacation camp site plan was started last year and has proved so successful that it is expected that improvements and additions will be made to these camps from time to time. In addition to those established at de Sabla and Spaulding there are several new camp sites under contemplation. One undoubtedly will be established this summer at the Pit. These camps make it possible for members to spend their vacation at some of the most beautiful spots in our State at a very small cost. A number of our members and their families enjoyed inexpensive vacations at these camps last summer and it is expected that a greater number will take advantage of the opportunities offered this year. In fact, it is anticipated that their popularity will grow steadily.

In line with recreation affairs a basketball league is in process of organization and it is expected that very shortly the various sections will announce definite plans in this connection, although the girls' basketball team of Sacramento has already started interest in this direction by winning a game played with the long distance operators by a score of 21-3. From all accounts, they are after more laurels.

The tentative program of main events for the year are outlined as follows, programs of various sections to be announced later:

Snow carnival to be held in March, place not yet determined; spring outing at de Sabla in May; annual dinner, San Francisco, in June; annual picnic, San Jose, in July; San Joaquin outing, Modesto, in September; Hallowe'en party, Redding, in October; annual meeting, San Francisco, in November; Christmas frolic, Oakland, in December.

The first meeting of the new officers and chairmen of various committees of San Francisco section P. S. E. A., was held at headquarters, Tuesday evening, January 5th. Chairman Larabee presided and from tentative reports of the various committees many surprises are in store for the members in 1922.

The first get-together meeting for the year 1922 will be held at Native Sons' Hall on Monday evening, January 30th. Dancing will follow.

Chairmen of the various committees for 1922, appointed by Chairman Larabee, are as follows:

J. L. Gilbert, social activities; P. E. Chapman, educational; W. H. McLaughlin, membership; D. J. McCarthy, benefit and loan; H. S. Furlong, attendance; Miss M. Gray, women's affairs; P. B. Hardenbergh, reception; W. F. Mulford, athletics; A. Gudehus, editorial.

The 1921 season of East Bay section closed with a "blaze of glory" December 13th, on which evening the bookkeeping department put on its show.

The program was opened with two jazz numbers. Betty Jane Teeple next gave a monologue, introducing six of the most talented members of the bookkeepers' section in the one act comedy, "The Teeth of the Gift Horse." It was rendered in a way that would do credit to any organization. The many humorous situations were brought out in a capable manner and the interest of those present could be seen by the close attention and hearty laughs.

The characters, all of whom can well be proud of their efforts to please, were: Chas. Carlson; Tess Brewer, his wife; Jessica Stangland, their aunt; Esther Samuelson and Harold Anderson, their friends; and Adele Narinian, the maid.

Swall Brothers next put on a saxophone duet which was permeated with jazz.

The Christmas spirit then entered.

Two carols were sung by the bookkeepers, chorus, after which the lights were dimmed and Old Santa and his tree were with us. The good little boys, such as George Furniss, John Pape, Al Parratt, Will Shuhaw, Herb Leonard, Will Kelly, and others were remembered.

Dancing followed until 12 o'clock and all were of one opinion, "it was great."

Chairman L. Tyer of the educational committee, East Bay Division, has been very active during the month of December. Two most interesting lectures were given. Monday evening, December 12th, Mr. F. Pelle gave an illustrated lecture on "Utilization of Gas" (industrial). Monday evening, December 19th, Mr. S. J. Lisberger gave a lecture on pole preservation. This lecture was illustrated by a moving picture showing the methods of treating the poles.

Both lectures were well attended and it is pleasing to note that the interest in educational activities in this division is steadily increasing.

Saturday evening, December 17th, at 6:30, found over two hundred and fifty members of the families of the employees of the de Sabla Division gathered around the tables in the Elks' Hall at Chico, partaking of a bounteous turkey dinner. The tables and room were very artistically and cleverly decorated. An efficient corps of white coated waiters headed by Division Manager I. B. Adams and Chairman T. J. Dunn, served the dinner in a style that would be a credit to the finest of hotels and cafes. In one corner of the hall, overlooking the tables, stood a large Christmas tree which was very beautifully trimmed and decorated. In the role of good old Santa we found Mr. W. H. Ostrander, who distributed presents and candy to the children.

This was considered the proper occasion for presenting a little token of remembrance to our retiring chairman, Mr. T. J. Dunn, for his tireless and efficient service. Mr. C. L. Donaldson, chairman-elect for the ensuing year, on behalf of the members of the P. S. E. A. of the de Sabla Division presented Mr. Dunn with a gold signet ring. Mr. Dunn responded with a few well chosen remarks.

After the hall was cleared dancing followed until midnight.

Tidings From Territorial Divisions

East Bay Division

It is said, and it is undoubtedly true, that an enterprising man with high principles can take the smallest possible thing and make of it the biggest possible thing.

Ordinarily, people who wish to belittle any business use the expression, "It's only a peanut business," seeming to think the word "peanut" expresses about the smallest undertaking imaginable.

When mentioning the peanut business to anyone, the mind of the listener invariably reverts to the small peanut stand on the corner where a bag may be purchased for the small amount of five cents.

When the fire and earthquake of 1906 spread its path of destruction over San Francisco thousands of homeless people crossed the bay to Oakland for shelter and food. Temporary tents of all sorts were put upon empty lots and back yards. A city grew within a city over night, but people were still suffering from a greater need, and that of food. All of the merchants of Oakland made generous donations to the refugees. Mr. N. P. Damianakes, manager and owner of the present California Peanut Company, at that time owned one of the largest produce markets in Oakland, where peanuts were also carried. Besides helping with flour and potatoes Mr. Damianakes had ten sacks of peanuts roasted and distributed them to the refugees, without any thought that this act would serve as a great advertisement and the small beginning of greater things.

Verily, it is the small things that change the whole course of life. Orders for peanuts began to arrive from all quarters. A small plant was erected in the rear of his residence on Twentieth street and peanuts of all forms, also peanut by-products, were handled, from a sack to a carload. Two years later the plant was enlarged by the addition of another small building. A few years later another annex was added and with the passing of the years the business grew and grew to

such an extent that orders could not be taken care of properly, so it was found necessary to enlarge the capacity, and this new home was built, occupying 40,000 square feet of floor space.

The foregoing is a brief history of a unique enterprise, not of Oakland alone, but of the entire Western States. The phenomenal growth and success of the California Peanut Company cannot be attributed to luck, but, rather, to the high-minded policy of the management. The watchword of the company has always been, "Quality First and Quality Last."

Again, the company prides itself in being one of the pioneers in the manufacture of peanut butter, when people did not know its use or value. Thousands and thousands of samples were sent out to housewives. At first it was considered as a delicacy, then the doctors prescribed it, and hospitals used it as a food for invalids because of its high nutritive value and easy digestibility. But it soon outgrew this limitation and now is considered a standard food with more fuel value per pound than any other food.

As a matter of fact, peanut butter contains one and a half times as much protein, more than three times as much fat, nearly five times as much ash, and three times the fuel value as round steak. In addition to this peanut butter contains 17.1 per cent of carbohydrates.

The peanut business is a large consumer of gas for roasting and electricity for power.

J. CHARLES JORDAN.

At the Candy Land Dairy Lunch, 2242 Telegraph Avenue, Berkeley, a 2-section coal range was recently converted to gas. This change was effected by installing three special burners under the grate bar and filling the firebox with broken firebrick.

The cost involved of changing this range to gas was very much less than

that which would have been required to install new equipment, and the cost of operation leaves nothing to be desired.

Hayward is going to have three movie theaters. We can see right away where the young Lotharios of Hayward are going to have a crimp put in their pocket-books by the maidens, who have an unsatisfied desire to view the movie stars.

Of the fourteen canning concerns in operation in the east bay district at the present time, some of them of extensive capacity and doing a business of national reputation, and with six more preparing to establish plants to operate next season, Oakland and its immediate vicinity has already become one of the most important centers of the canning industry on the Pacific Coast.

"Every element to attract canning concerns to a community is to be found in the Alameda County area to a greater extent than elsewhere in the West, and the development of this industry as one of the most important factors in the State's commercial life is assured," said Fred W. Le Ballister, who is arranging for the establishment of three new concerns.

Among those already established are: Sunlit Fruit Co., California Specialties Co., Western Canning Co., California Packing Corporation, H. C. Prince Co., United Canneries, Wright & Co., Hunt Bros., California Pickle & Sauce Co., California Syrup & Extract Co., Pacific Vinegar & Pickle Co., Muller Bros., Virden Packing Co., Libby, McNeil & Libby, H. Jones & Co., and Bisceglia Bros. Canning Co.

The new \$175,000 High School at Martinez will be ready for occupancy February 1st and is a model of all the latest improvements for school buildings.

The storm of Christmas morning played several peculiar tricks throughout that district, blowing the top off the city reservoir, the roof off a new cottage, leaving the family at the mercy of the rain, while the meter reader reports that he has to pick up sides of some of the small pump houses throughout the suburban territory in order to find the meter.

An extension has just been installed to supply the wharf of the Rodeo-Vallejo Ferry Company at its new site near Oleum. An immense electric sign is to be installed across the highway.

The deepest well in the country is being bored two miles south of Irvington. The Western Well Company of San Jose intends to sink the well as deep as 2,500 feet. The new well will be used to irrigate a new nursery.

Tomato growers had a good season and received good prices.

The cauliflower growers are grateful for the fine rains. This crop is looking splendid. Farmers all over the valley were well pleased with the irrigation season, with no restrictions on the use of power. Farmers on the hillsides are getting busy planting early peas and potatoes.

A very spirited controversy has started in the eastern end of the district as to just where the Garden of Eden was located. Two Pacific Gas and Electric men are vigorously proclaiming that the garden was located in their districts.

Harry Weber, the efficient manager of Newark substation, claims that he has every evidence that the garden was located at Mission San Jose.

Bill Oswill, the hustling local agent of Hayward, is equally and positively certain that the garden was located at Castro Valley. It seems that a while back that Harry Ross of the San Leandro office was supporting Bill Oswill and his Castro Valley claim, but since he has been collecting at Mission San Jose for the past several months it looks as if he were going to switch and support Weber.

Both Weber and Oswill are advancing their claims with the utmost vigor and we hope to present in the next issue of the Magazine the new developments from both sides without prejudice or favor.

E. B. DE VISION.

We regret to announce the resignation of Mr. W. R. Catching as superintendent of substations in East Bay division. Mr. Catching became an employee of the company September 18, 1917, in the O.

& M. department, and through his ability was promoted from time to time until he became superintendent of substations. "Pacific Service" is realized through the efforts of men like Walter. We do not like to see him go, but if it must be we unite in wishing him the best of luck. He has been made Pacific Coast agent for the "Le Carbone" carbon brushes, with office and headquarters in San Francisco.

On Thursday evening, December 29th last, through friends and members of his department Mr. Catching was given a pleasant surprise at the electric department office at Oakland headquarters. Mrs. Catching and Mr. Kirtley co-operated somewhat in getting Mr. Catching to the office about 8:15 p. m., where he was supposed to have done considerable coaching and to have imparted much information regarding g. m.'s., station apparatus, etc. Mr. Catching has a marked ability in foreseeing electrical disturbances to "Pacific Service," but his foresight seemed lacking as regards the designs of the friends who suddenly appeared in the office to wish him a happy new year and the best of success in his new venture.

Mr. C. Kirtley presented Mr. Catching with a handsome walrus skin traveling bag and toilet outfit on behalf of "Pacific Service" friends of the East Bay Division. Candy and cigars were provided for those present and music was furnished by one of Thomas A. Edison's latest productions. Those present were: Mr. and Mrs. W. R. Catching, Mr. and Mrs. Fred Berghauser, Mr. and Mrs. C. E. Harrison, Mr. and Mrs. Kress, Messrs. S. B. Harris, G. A. Higley, A. C. Archbold, N. Z. Hendrickson, N. Nelson, P. Spault, P. Spies, G. Barrett, I. Elliot, G. S. Snow, A. B. Gore, C. M. Weyman, C. Gentis, H. Nye, C. Kirtley, T. A. McDonald, A. H. Burnett, R. L. Popham, A. York, H. Abernethy, G. F. Whitworth, W. P. Clark, L. D. Tyceer.

L. D. T.

De Sabla Division

Christmas at de Sabla this year was probably the same as at other parts of the system, a matter of service, especially for the ditch repair men. With the Hendricks ditch out and a large tree in the

Butte ditch, it took the entire force to repair them, so it was necessary for some from the power house to help on the lower Centerville ditch where a minor break occurred. The ditch repair men worked in about three feet of snow.

The power house operators were so busy with trouble that although an excellent turkey dinner awaited them it was a case of grab and run. The ditch repair men did not get in until late at night but they had developed an appetite and enjoyed a good dinner.

Men were up most of the night keeping the phone lines in service. During the entire day the writer never heard a complaint from anyone. The only greeting was "Merry Christmas."

I. B. A.

Colgate Division

Christmas Day, 1921, will undoubtedly long be remembered by all members of the operating departments of "Pacific Service" by reason of the severe storms which swept the country. However, although the power house operators were kept extremely busy maintaining "Pacific Service" on the lines to light the Christmas trees and furnish Christmas cheer in the homes of our consumers, no damage was occasioned by the storm in this locality and the rest of the operating force was able to enjoy their Christmas turkey and "fixings" in peace and comfort despite the howling of the wind.

Due to the prospective absence of many of the inhabitants of the camp for visits with their families and relatives, some festivities were held the week preceding. Under the auspices of the Pacific Service Employees Association a very enjoyable party was held on Saturday evening, December 17th, at the Martin House, employees and their families to the number of 40 participating. The club room was very tastefully decorated with red berries, while ferns and mistletoe and a small Christmas tree prettily decorated adorned the billiard table. Whist was the main diversion, prizes being awarded to the lucky and unlucky players, while a game of Pit provided much amusement, more noise and a number of sore throats for the children and near children. "Eats," of course, fol-

lowed and a very enjoyable time was had by all. Much credit is due the ladies of the camp for the planning and management of the affair, while the P. S. E. A. is to be credited for its financial assistance.

F. L. Mix.

Shasta Division

The Christmas season at the various power houses of the Shasta Division was duly observed by the shorting of high lines and burning out of generators, but the operators were able to find a few hours to enjoy turkey.

The only power house having snow on the ground was Kilarc, which had about two feet, and the boys had a fine dinner and tree in the mess house and enjoyed a game of "500" during the evening. Mr. Jess Marx, foreman, had a tree in his house and also played Santa, receiving as his gift a bouncing baby boy.

At South Power House Operator Alexander played host. A large tree with lights, etc., formed the background of a splendid turkey dinner, to which all concerned did full justice.

Foreman Devoe of Inskip also entertained Foreman Gilmore of South Power House, H. H. Huffaker and their wives at a turkey dinner, after which they adjourned to the mess house, where Operator George "Shorty" Graves played Santa and distributed presents. Dancing and card playing was then enjoyed until the wee small hours.

The boys at Volta had dinner in the mess house and indulged in card playing. Ross Edwards and Bob Norton had trees in their respective homes.

At Coleman Christmas was celebrated with trees at the various houses and an excellent dinner in the mess house.

The Parent Teachers' Association of Redding had a Christmas tree at the band pavilion for the children of Redding, where candy and nuts were distributed and shoes and clothing given to the needy. Our esteemed manager, Mr. Milford, assisted in the merriment as Santa Claus.

C. M. C.

CHRISTMAS AT PIT RIVER

Christmas at Pit River camp No. 1 was celebrated in genuine Christmas style. The entire out-of-doors covered with

heavy snow gave just the right feeling, while indoors our "Pacific Service" club house wore a gala dress of garlands of spruce and holly.

The main feature of the entertainment was the story of the "Old Woman Who Lived in a Shoe," which was done in a way that delighted the audience. Other numbers on the program consisted of various solos, duets, a quartet, clever imitations by Burt Ambrose, a short farce, and last, but not least, Santa Claus was on hand and presented presents to fully two hundred guests. The Pit River band provided music at intervals during the program.

The festivities were brought to an end with dancing and a buffet supper.

San Joaquin Division

It was a damp Christmas at Electra (the weather, I mean, not the spirit of the occasion). We all did the best we could to make a lively day of it, but owing to the bad weather and, in some cases, the lure of mother's cooking, there were not many present. Two tables, however, were spread in the front room of the old boarding house and loaded with all the goodies that go to make up a real Christmas dinner, prepared by our very efficient cook, Fong Coon, and his able assistant, Fu Chu.

After the repast those who felt like it indulged in dancing and card games until time to eat again, after which more dancing, and some even had the nerve to eat nuts and candy after all the turkey and "fixings." Music was furnished by the new Victrola recently purchased by the Electra Club.

Among those present were Mr. and Mrs. M. S. Burgess, Mr. and Mrs. Ralph Garbarini, Mr. Kieth, Mr. and Mrs. S. F. Smith, Mr. J. C. Quillinan, Mr. Henry Wettstein, Mr. A. Spinetti, Mr. L. Carpenter, Mr. Jerome Madden, Mr. R. L. Trabucco, and Byron and Warren Smith.

Mr. and Mrs. E. F. Dicken of Electra spent the holidays at Davis, visiting with home folks.

Santa Claus plowed through the mud somehow and left a number of very pleas-

ing things at the Nelson and Smith homes for the small boys. No one saw him.

The people living on "Electra Heights" did not venture down the tramway on Christmas owing to the bad weather; all report a good time at home.

Owing to recent heavy rains and snow in the mountains Electra is again turning out kilowatts in plenty, and sends to "Pacific Service" best wishes for a happy and prosperous New Year.

S. F. SMITH.

The weather at Stanislaus on Christmas Day was fine for ducks, and also for line trouble. The 104 KV lines from Stanislaus to Bay Shore celebrated the day in a very obstreperous manner, much to the disgust and dismay of East Bay Division.

After East Bay Division had put the finishing touches on the 104 KV lines and both were back in service, Stanislaus flume took it upon itself to start a little excitement, and proceeded to break itself all up. A boulder rolling down the hill took out eight 16-foot boxes and washed the ground out below the flume to a depth of some forty feet. This occurred at 1:00 p. m. on December 27th. Repairs to the flume were completed and water back in it at 4:00 p. m. January 1st. Then the boys at Stanislaus began to enjoy the holiday.

A bright spot in this rather gloomy tale, however, was the wonderful Christmas dinner which Glego, our chef, cooked on the new electric range which was installed only a few days before Christmas. He fairly outdid himself, which is saying a good deal, in the preparation of turkey and the rest of the "fixings."

W. P. BEDGOOD.

Drum District

The following article appeared in the Placer Herald under date of December 24, 1921.

"QUICK WORK"

"Last Saturday morning about 11 o'clock, the main water pipe in front of Lee's store bursted. The pavement was raised for several yards. At 10 minutes past 11 the P. G. & E. had three men on the job and in an hour had a force of

fifteen men at work. By Monday at noon the job was completed, the new pipe laid and the concrete relaid.

"If the city owned the waterworks, it would have taken a month to do the job.

"At the time of the recent election for water bonds the Herald and others put forth as one of the arguments against the water bonds that the main water pipes were very old, and were liable to break at any day."

H. M. COOPER.

North Bay Division

The storm on Christmas day caused approximately \$8,000 worth of damage in North Bay Division. Communication by telephone was entirely cut off. However, the men who were away immediately hurried home in order to do their share in repairing the trouble.

Assistance was offered by owners of trucks, etc., and the public in general accepted the inconvenience caused with very few complaints.

Practically all service was restored within three days.

The American Dredging Company is progressing with the work of San Rafael Canal and it is estimated that the work will be completed during the early part of March.

This will enable heavy vessels to unload their cargoes at the municipal wharf which is to be constructed by the city of San Rafael.

A ladies' rest room has been constructed in the San Rafael office.

The original quarters provided space for two women employees, and as this number has increased to ten the new arrangements are highly appreciated by our girls.

The city of San Rafael is contemplating the installation of a complete system of electroliers. It is intended to use concrete standards similar to those in use in Alameda, with one large lighting unit, and to dispense with all center suspension and bracket type fixtures.

After three years of idleness the Nolan & Earl Shoe Factory at Petaluma will

shortly resume business. It was sold through the efforts of Mr. Kerrigan, secretary of the Petaluma Chamber of Commerce, to an eastern firm.

We have recently extended our electric distribution line from Petaluma to the Marin boundary line at San Antonio Creek, approximately five miles, giving service to many farms that have heretofore been dependent upon gasoline engines and kerosene lamps.

While hunting near Schuetzen Park on Sunday, January 8th, Mr. Edward Bergue found one of our private telephone wires that had broken loose from the pin lying approximately four feet above the ground. In attempting to pass under it Mr. Bergue took the wire in both hands to lift it over his head. The static electricity held him fast and he was unable to release himself.

His companion sent word to our substation, the circuit was killed and Mr. Bergue was released with no injuries from his experience.

We have completed a gas distribution system in Vallejo annex, where we have taken on approximately 120 new gas consumers.

Almost every consumer purchased a gas range.

The installation of a 9 foot by 24½ foot Slugh shell gas generator and other equipment at Santa Rosa is almost completed.

The load had reached the capacity of the former equipment and the addition of this new set will take care of our present load and will allow for future growth for some time.

Forest U. Naylor, salesman for Napa and Vallejo districts, has been transferred to San Jose division.

We sincerely regret losing Mr. Naylor. However, the 42,000 square miles is more to be considered than any individual

section thereof and we know Mr. Naylor will handle his new territory to the entire satisfaction of all concerned.

H. G. R.



San Francisco Division

TRANSPORTATION DEPARTMENT

The new gasoline railway bus car has just received its last coat of paint and is ready for service on the company railroad at the Pit River project. It presents a unique and attractive appearance. The wheelbase is 180 inches, and the body is considerably larger. The motor truck wheels have been replaced by a special four-wheel pony truck in front and extra heavy steel wheels with steel flanges, like the wheels of a locomotive, in rear.

Mechanically the chassis is practically identical with the regular White truck chassis.

We have added to the department a complete radiator repairing outfit capable of repairing any make of radiator; also an electric sewing machine for handling all top and curtain work.

Sixty-five per cent of all automobile troubles are caused by the lack of care or proper operation. This is probably because few operators have realized the necessity of really learning to understand the motor vehicle. The only way to get the most out of your car with the least expense is to spend a little time in learning a few fundamentals of automobile construction. The San Francisco garage is at your service to give you any information you desire.

A wedding which is of much interest to his many friends and fellow co-workers is that of Mr. Phillip H. Phillips, better known as "Phil," of the auto repair shop, to a charming young lady. The wedding took place Christmas eve.

In addition to their best wishes the boys of the auto repair shop presented Phil with a nine cup, Hotpoint electric percolator in order that he might have his coffee hot in the morning. R. W.

On the evening of December 28th, Mrs. Charles Peterson, who, until November 23rd last was Miss Reita McOmie of the telephone department, was complimented by a dinner given in her honor at a downtown Italian restaurant.

The dinner was in the nature of a farewell, as Mrs. Peterson left the company December 31st, rounding out ten years of loyal and efficient service. The Pacific Service Employees Association sent a very beautiful basket of roses which served as the center piece of the prettily arranged table. Several very handsome presents were given, one being a French mirror, the gift of her friends and associates, and another an electric lamp given by members of various departments of the company. The following attended the dinner:

Mrs. Camilla Dixon, Misses Mary Mazzini, Anna Morrison, Helen Larson, Florence Meehan, Oral Carrere, Camille Looney, Margaret Gray, Elizabeth Gray, Helen Fellows, Charlotte Rosenbach, Alma Tilley, Zita O'Connor, Winnie Cosgrove, Agnes McOmie, Celise Boyce, Ruth Herbert, Alyce McDermott and Frances Kiernan.

Mrs. Peterson has the very best wishes of "Pacific Service" in her new life.

There has recently been installed at Station "I," Eighth and Mission Streets, a new General Electric Company 1,000 K. W. rotary converter to take the place of the motor generator set moved to Station "K."

The addition of these two machines are to meet the greater demand for the municipal railroad load in San Francisco.

One interesting feature with the moving of the machine from Station "I" to Station "K," which is at Twenty-fourth and Balboa Streets in the Park Presidio district, was that the contractor used house rollers for this machine and towed the same with a five-ton truck which was equipped with a windlass. This method of moving the machine eliminated the necessity of disassembling the same, and as it weighed approximately forty-five tons it would be impossible to move it under any other method.

Some of the other changes in this district have been the installation of four

1,500 K. V. A. transformers and cutting Station "K" over from 2,400 to 4,100 volt distribution.

There has also been installed a new 4,100-volt bank of transformers at Station "E" and in the very near future we will put in service a new 4,100-volt bank at Station "F;" this being along the line of gradually cutting over from two phase to three phase in the entire district.

W. R. BAKER.

The Steam Distribution Department has completed the installation of 65 feet of 4-inch and 242 feet of 3-inch steam main extensions on Turk, Hyde and Sutter streets.

R. H. C.

The following speaks well for San Francisco division and is highly appreciated:

PATEK & COMPANY,

Laundry Supplies, Industrial Chemicals,
Dyers' & Cleaners' Materials.

513-516 Sixth St.

SAN FRANCISCO, CAL.,

December 29, 1921.

Pacific Gas & Electric Co.,
Service Department,
Sutter Street,
San Francisco, Calif.

Gentlemen:

I wish to compliment your service department for the very prompt attention that has been given me of late.

In one instance where our main fuse has blown out at about 11:30 o'clock at night, your men were on the job within a half hour.

Yesterday we were troubled with a leak in the gas pipes, and the same was repaired by your department within one hour.

I feel that it is only right to acknowledge this promptness on your part, and to assure you that your "Pacific Service" is a fact as well as a slogan.

Very sincerely yours,

S. W. NEWMAN,

100 Spruce St., San Francisco.

H. B.

The "Pacific Service" Roll of Honor

In accordance with the custom inaugurated in 1916 the annual distribution of service badges to employees fell due this month.

These buttons, bearing the "Pacific Service" emblem, are a token of reward for long and efficient service. They differ in design according to terms of service. Those indicating ten years' service are plain; those indicating fifteen years' service show one star in the apex of the emblem triangle; those indicating twenty years' service have a single diamond; twenty-five years' service, a diamond and a star; thirty years' service, two diamonds; thirty-five years' service, two diamonds and a star; forty years service' service and upwards, three diamonds.

There are 263 employees on the list this year, of whom 136 have moved up a grade since the last distribution, while 127 employees receive the ten years' service badge. The list follows:

FORTY YEARS' SERVICE

San Francisco Division: Patrick Rodden.

THIRTY-FIVE YEARS' SERVICE

East Bay Division: J. A. Hahn, J. J. Mulgrew; *San Francisco Division:* Samuel Hertz.

THIRTY YEARS' SERVICE

Head office, Secretary's Department: C. E. Holt; *East Bay Division:* W. E. Blakeley; *Sacramento Division:* C. E. Catlett, W. H. Dean, O. D. Drudge, T. L. Elliott, B. Harr; *San Jose Division:* M. Stack; *San Francisco Division:* E. T. Floyd, J. E. Fitzpatrick, Jas. McKay, Jas. O'Brien, P. J. Riter, A. A. Whitfield, R. B. Bowman.

TWENTY-FIVE YEARS' SERVICE

Head office, Secretary's Department: A. J. Klung; *East Bay Division:* H. N. Mosher, A. T. Tunley, L. A. Welch; *Sacramento Division:* E. E. Greeley, N. J. Hullin; *San Francisco Division:* W. T. Blackburn, Peter Burkhout, G. Badger, Jacob Reinhart.

TWENTY YEARS' SERVICE

Head office, Department of Electrical Construction and Operation: P. M. Downing, Vice-President in charge; *Purchasing Department,* Geo. I. Williams; *Engineering Department,* Jos. Mini, Jr.; *Colgate Division:* W. S. Dresser; *De Sabla Division:* L. McGuffin, L. I. Spangler; *Drum Division:* L. H. Hartsock; *East Bay Division:* R. Biven; *Sacramento Division:* J. L. Dennis, E. W. Florence, Wm. Gubel, W. C. Renfro, L. Shadinger, J. T. Wardlaw, Lewis Resser, C. R. Harlow; *San Joaquin Division:* E. H. Lowe; *San Francisco Division:* A. Sylvester, Patrick Byron, Frank Ellis.

FIFTEEN YEARS' SERVICE

Head office, Claims Department: J. P. Coghlan, Mrs. M. Holton; *Department of Electrical Construction and Operation:* C. E. Young; *Personnel Department:* Miss B. J. Dale; *De Sabla Division:* C. B. Campbell, Ethel Florence; *Drum Division:* G. M. Atwood, Albert P. Clark, W. J. Curtis; *North Bay Division:* C. J. Pierard; *Sacramento Division:* L. Armfield, E. R. Engebritsen, G. W. Holmes, H. W. Jenkins, C. B. McAllister, E. Middleton, C. H. Schwan, H. P. Seivers, F. W. Smith, F. A. Starmer, H. E. Woodring, W. Yellie; *East Bay Division:* A. M. Doll, E. W. D'Ombra, H. Dierks, Thos. Gateley, G. W. Gilmour, P. A. Harris, G. A. Higley, F. C. Jacobs, Miss R. E. Lamont, S. Lucich, H. H. Leonard, Wm. Lucio, J. Minikello, W. D. Oswill, Mrs. M. M. Parsons; *San Joaquin Division:* A. McBeth, F. G. Bartlett, M. Bone, J. H. Moore, Eli Oren, Jos. Raggio, F. W. Schimmelpfenning, H. A. Walker; *Shasta Division:* M. C. Gilbert; *San Jose Division:* Manuel H. Brown, T. Thornhill; *Sacramento Supply District:* Jos. Klinek, E. F. Speaker; *San Francisco Division:* Chas. Brearty, Jas. Feeney, John Hyland, W. J. Fitzgerald, A. Harris, L. B. Stein, H. Towle, W. Vallette, J. J. Breslin, Thos.

Godsil, D. Love, A. B. Maguire, B. Quinlan, Herbert Richter, Jerry Sheehan, M. A. Tobin, Thos. McHenry, F. Seiberlick, W. Calvin, J. Salls, W. R. Baker, R. H. Chapman, M. Connell, H. E. Kirsch, Michael Manning, Karl Muller, Wm. Delaney, Frank Talcott, G. S. Tracey; *San Francisco Supply District:* A. E. Henderson, Wm. Howell, John Meyer, Max Plagemann, G. C. Robb, Henry Schroer; *West Side Division:* C. Bartlett, F. M. Clawson.

TEN YEARS' SERVICE

Head office, Auditing Department: Miss M. E. Dolan, Miss J. O'Connell, Russell Holt; *Commercial Department:* R. E. Fisher, Miss Julia Small; *Electric Construction and Operation Department:* R. B. Gray; *Engineering Department:* R. A. Monroe, J. P. Jollyman, H. L. Raymond; *Gas Department:* S. J. Dickson; *Land and Tax Department:* W. J. Smith, J. W. Buzzell; *Law Department:* T. J. Straub; *Property Agent's Department:* Miss Rita McOmie; *Publicity Department:* F. S. Myrtle; *Secretary's Department:* P. B. Hardenbergh; *Treasurer's Department:* Otto Schultz; *De Sabla Division:* A. Caspare, J. A. Compton, J. A. Fish, C. F. Slocum; *Drum Division:* Jas. E. Bissett, John R. Carl, H. H. Hallett, Thos. Jefferson, Chas. Johnson, John C. Jones, C. A. Leonard, Chas. Pearce, F. A. Philbrick, W. M. Roberts, D. C. Stewart, Jr., Geo. W. Tobey, H. S. Wilson; *East Bay Division:* W. J. Armstrong, E. P. Baggot, M. Boyle, R. Crowell, C. A. Carlson, T. Dawkins, J. A. Fryer, Jr., F. W. Folsom, E. D. Fine, F. Gilbert, H. L. Godbier, Earl Hogan, J. L. Hancock, F. R. Handel, J. Krug, H. G. Keesling, H. A. Logan, J. Melby, M. P. Pearce, Lee Ransome, W. O. Stephens, W. A. Sturm, Patrick Smith, F. J. Southerland, Dorman Veirs, H. J. Wagner; *Fresno Division:* John A. Deylin, O. R. Shirkey, J. Young; *North Bay Division:* Archibald Balchin, J. Canning, Miss Lulu Gibson, H. Knopf, Thos. Powers, C. Reuss; *Shasta Division:* B. A. Mason, Geo. Smith, H. S. Ward, Elbert Wilson; *Sacramento Division:* Geo. B. Baldwin, C. Bond, F. Bond, H. A. Filbert, J. W. Douglass, C. E. Gostick, F. H. S. Harrison, F. P. LeMoin, H. M. LeMoin, F. T. Taylor, B. A. Van Slyke; *San Joaquin Division:* Chas. Conrad, Wm. Deicke, P. H. Jaeger, F. Kraetsch, Geo. Nelson, C. V. Wilbur; *San Jose Division:* G. H. Atkinson, A. E. Caldwell, C. H. Capwell, E. A. Danforth, F. W. Hume, P. E. Quigley; *San Francisco Division:* A. C. Du Fossey, Miss May Hooley, A. G. Hanton, H. S. Bowers, J. Cruise, R. B. Howe, E. Courtier, J. Jacobsen, L. C. Manor, G. Nichols, F. Reinhardt, L. N. Sachs, A. E. Hamberth, Alfred Cecchi, Michael Doherty, C. Herlihy, John Warnock, Howard Weinthrop, John H. Godbold, Thos. Meyers, Bruno Stenfore, Bert Upton, R. W. Belson, J. H. Parker, C. A. Ross, Geo. W. Warren, Henry LeLouarn, David Reese; *San Francisco Supply District:* Hugh Corbett; *West Side Division:* Fred Jenks, Frank McKay.

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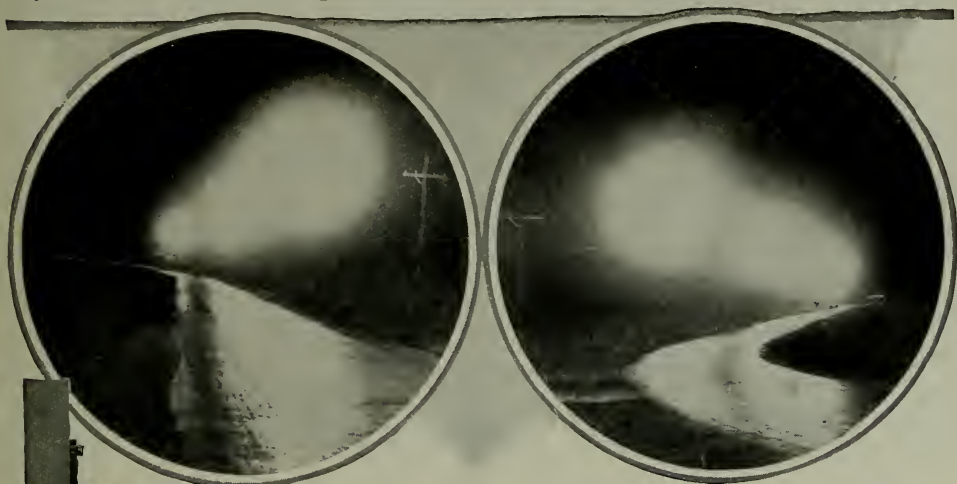
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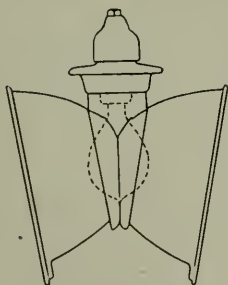
Los Angeles

Highway illumination which lessens headlight glare and shows up the road behind an approaching car is a safety factor not to be neglected.



Country roads can be made as safe as city streets

From the illuminating engineering laboratories of the General Electric Company has come a new system of rural highway lighting—one that keeps the light on the road, not on the fields or in drivers' eyes.



In each unit, a single lamp with three nested reflectors throws the light downward and along the road. Spacing of 600 feet and lamps as small as 250 candle power (155 watts) give satisfactory service with high economy.

This fixture with three nested reflectors is the secret of good highway lighting.

G-E street lighting specialists at all of our district offices will be glad to furnish further information.

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General Office
Schenectady, N.Y.

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Sales Offices in
all large cities

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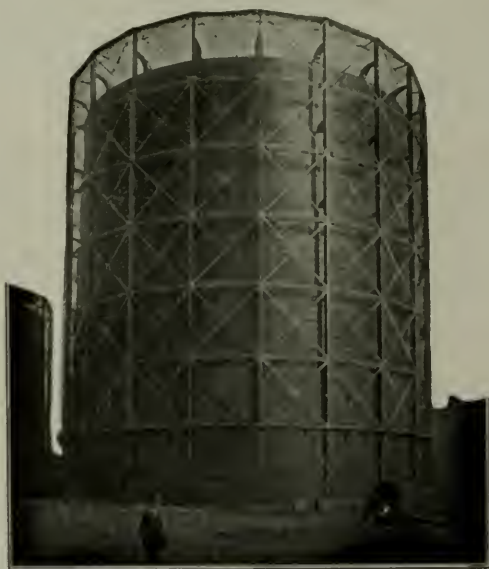
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For House, Hotel and Apartments.

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Gas Holders
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ALLIS-CHALMERS MANUFACTURING CO.

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Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

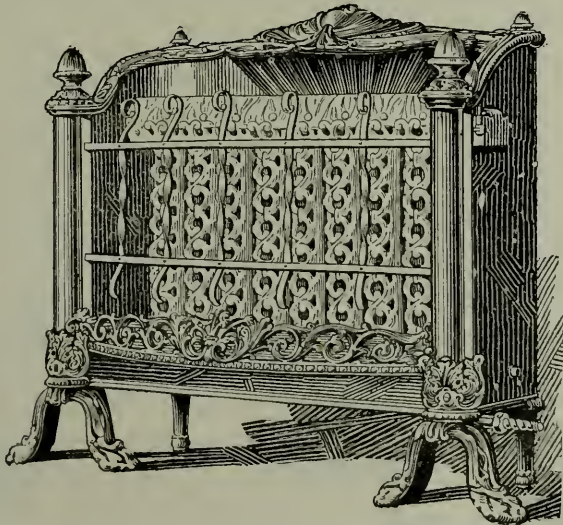
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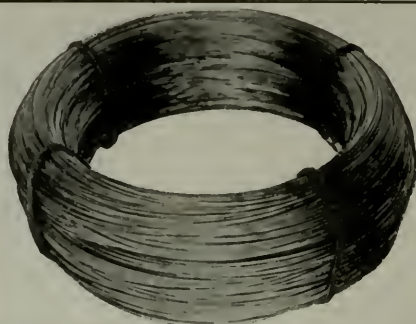
No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

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The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California



Your Requirements

of bare copper wires and cables of all kinds and sizes can be supplied by us on short notice.

STANDARD Bare Copper Wire

is rolled and carefully drawn to gauge in our rod and wire mills from highest grade copper wire bars.

Write our nearest office for prices.

Standard Underground Cable Co.

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The Fulton Gas Pressure Governors FOR ARTIFICIAL OR NATURAL GAS

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

Chaplin-Fulton Manufacturing Co.
PITTSBURGH, PA.

What More Could Any Housewife Ask for Than This Combination Gas Range Offers?



336 B.K. in Blue or Gray Enamel
Finish, Nickel Trimmed, with
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IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

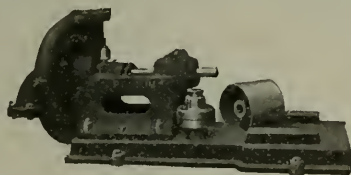
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QUALITY SERVICE FULL ECONOMY

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Use a pump suited to motor-drive, even if electric power is not immediately available.

The PELTON Centrifugal Pump shown herewith develops the same high efficiency for either belt or direct motor drive, and but little expense is involved in changing from one to the other.



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WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

RIVETED STEEL PIPE, STAND PIPES, PENSTOCKS OR ANY SPECIAL
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ELEVATED STEEL TANKS—OIL OR PRESSURE TANKS

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STEEL WIRE FENCE WITH SELF-ANCHORING STEEL POST

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Carelessness can cause no injury.
Every touchable part is dead in--

WESTINGHOUSE-KRANTZ SAFETY PANEL BOARDS



Humanity and good business judgment demand the elimination of panel boards with exposed live contacts. They have caused too many serious accidents. Protect your employees by installing the safety panels.

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*Invites you to use its fully
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A Willing, generous service, cheerful in spirit—helpful by strength and conservative when necessary to maintain that strength.

It is our purpose to render a service that will demonstrate our sincere interest in the financial welfare of our customers and other friends.

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TO OVER 596,000 CONSUMERS OF

GAS • ELECTRICITY • WATER • STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

DIRECTLY			INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity.....	171	1,120,503	60	153,449	231	1,273,952
Gas.....	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic).....	18	61,719	8	15,488	26	77,207
Railway.....	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
¹ Alameda.....	28,800	¹ Verano.....	400	¹ Meridian.....	200	¹ San Leandro.....	5,703
¹ Albany.....	2,462	¹ Emeryville.....	2,390	¹ Millbrae.....	300	¹ San Lorenzo.....	500
¹ Alvarado.....	1,000	¹ Escalon.....	600	¹ Mills.....	400	¹ San Martin.....	250
¹ Alviso.....	517	¹ Eparto.....	200	¹ Mill Valley.....	2,554	¹ San Mateo.....	5,979
¹ Amador City.....	377	¹ Fairfax.....	250	¹ Milpitas.....	300	¹ San Pablo.....	500
¹ Anderson.....	750	¹ Fairfield.....	1,008	¹ Mission San		¹ San Quentin.....	3,000
¹ Angel Island.....	500	¹ Fall Oaks.....	300	¹ Jade.....	500	¹ San Rafael.....	5,512
¹ Antioch.....	1,936	¹ Fall River Mills	300	¹ Modesto.....	9,241	¹ Santa Clara.....	5,220
¹ Aptos.....	300	¹ Farmington.....	300	¹ Mokelumne Hill	900	¹ Santa Cruz.....	10,917
¹ Arbuckle.....	900	¹ Felton.....	300	¹ Monterey.....	5,479	¹ Santa Rosa.....	8,758
¹ Atherton.....	500	¹ Folsom.....	2,000	¹ Morgan Hill.....	646	¹ Saratoga.....	500
¹ Auburn.....	2,289	¹ Forestville.....	250	¹ Mountain View	1,888	¹ Sausalito.....	2,790
¹ Barber.....	500	¹ Fresno.....	45,086	¹ Mt. Eden.....	200	¹ Sutter City.....	1,493
¹ Belmont.....	375	¹ Gilroy.....	2,862	¹ Napa.....	6,757	¹ Shasta.....	200
¹ Belvedere.....	616	¹ Glen Ellen.....	1,000	¹ Nevada City.....	1,782	¹ Shellville.....	200
¹ Benicia.....	2,693	¹ Gonzales.....	500	¹ Newark.....	500	¹ Sheridan.....	250
¹ Ben Lomond.....	400	¹ Grass Valley.....	4,006	¹ Newcastle.....	750	¹ Smartsville.....	300
¹ Berkeley.....	50,036	¹ Gridley.....	1,656	¹ Newman.....	1,251	¹ Soledad.....	400
¹ Biggs.....	683	¹ Grimes.....	500	¹ Niles.....	1,900	¹ Soquel.....	400
¹ Bolinas.....	500	¹ Groveland.....	500	¹ Novato.....	500	¹ Sonoma.....	801
¹ Brentwood.....	400	¹ Guerneville.....	800	¹ Oakdale.....	1,745	¹ Sonoma.....	1,684
¹ Broderick.....	700	¹ Hamilton City.....	250	¹ Oakland.....	216,261	¹ South San	
¹ Burlingame.....	4,107	¹ Hammononton.....	500	¹ Oakley.....	200	¹ Francisco.....	4,411
¹ Byron.....	350	¹ Hayward.....	3,487	¹ Occidental.....	600	¹ Standard.....	500
¹ Ceres.....	637	¹ Hercules.....	373	¹ Orland.....	1,582	¹ Stanford Uni-	
¹ Capitola.....	300	¹ Hillsborough.....	931	¹ Oroville.....	3,340	¹ versity.....	2,700
¹ Carmel.....	638	¹ Hollister.....	2,781	¹ Pacheco.....	300	¹ Stockton.....	40,296
¹ Cement.....	1,000	¹ Honcut.....	500	¹ Pacific Grove.....	2,974	¹ Suisun.....	769
¹ Centerville.....	1,000	¹ Hughson.....	250	¹ Palo Alto.....	5,900	¹ Sunol.....	350
¹ Ceres.....	637	¹ Jone.....	1,000	¹ Paradise.....	500	¹ Sunnyvale.....	1,675
¹ Chico.....	9,339	¹ Irrington.....	1,000	¹ Patterson.....	694	¹ Sutter City.....	250
¹ Colfax.....	573	¹ Jackson.....	1,601	¹ Penn Grove.....	200	¹ Sutter Creek.....	920
¹ College City.....	250	¹ Jamestown.....	750	¹ Penryn.....	250	¹ Tehama City.....	196
¹ Collinsville.....	200	¹ Kennett.....	464	¹ Perkins.....	300	¹ Tiburon.....	400
¹ Colma.....	1,500	¹ Kentfield.....	500	¹ Petaluma.....	6,226	¹ Tracy.....	2,450
¹ Columbia.....	200	¹ Kenwood.....	300	¹ Piedmont.....	4,282	¹ Tres Pinos.....	300
¹ Colusa.....	1,846	¹ Keewick.....	300	¹ Pike City.....	200	¹ Tuolumne.....	1,300
¹ Concord.....	912	¹ King City.....	1,048	¹ Pinole.....	967	¹ Turlock.....	3,394
¹ Cordelia.....	300	¹ Knights Ferry.....	200	¹ Pittsburg.....	4,715	¹ Vacaville.....	1,254
¹ Corning.....	1,449	¹ Knights Land-		¹ Pleasanton.....	991	¹ Vallejo.....	21,107
¹ Corte Madera.....	607	¹ ing.....	400	¹ Port Costa.....	900	¹ Vina.....	300
¹ Cotati.....	200	¹ La Grange.....	200	¹ Princeton.....	300	¹ Vineburg.....	200
¹ Cottonwood.....	500	¹ Larkspur.....	612	¹ Red Bluff.....	3,104	¹ Walnut Creek.....	538
¹ Coyote.....	200	¹ Lathrop.....	600	¹ Redding.....	2,962	¹ Warm Springs.....	200
¹ Crockett.....	1,500	¹ Lewiston.....	200	¹ Redwood City.....	4,020	¹ Waterford.....	250
¹ Crow's Landing	300	¹ Lincoln.....	1,325	¹ Richmond.....	16,843	¹ Watsonville.....	5,013
¹ Daly City.....	3,779	¹ Live Stock.....	300	¹ Rio Vista.....	1,104	¹ Wheatland.....	435
¹ Danville.....	400	¹ Livermore.....	1,916	¹ Ripon.....	500	¹ Williams.....	650
¹ Davenport.....	300	¹ Loma Park.....	600	¹ Riverbank.....	200	¹ Willows.....	2,190
¹ Davis.....	939	¹ Loomis.....	500	¹ Rocklin.....	643	¹ Winters.....	903
¹ Decoto.....	300	¹ Los Altos.....	500	¹ Rodeo.....	300	¹ Woodland.....	4,147
¹ Del Monte.....	300	¹ Los Gatos.....	2,317	¹ Roseville.....	4,477	¹ Woodside.....	300
¹ Denair.....	200	¹ Los Molinos.....	200	¹ Ross.....	727	¹ Yolo.....	350
¹ Dixon.....	926	¹ Madison.....	300	¹ Sacramento.....	65,908	¹ Yuba City.....	1,708
¹ Drytown.....	200	¹ Manteca.....	1,286	¹ Salinas.....	4,308	Total Cities	
¹ Duncan's Mills.....	200	¹ Mare Island.....	600	¹ San Andreas.....	1,183	and Towns.....	1,347,844
¹ Durham.....	250	¹ Martinez.....	3,858	¹ San Anselmo.....	2,475	Add Suburban	
¹ Dutch Flat.....	750	¹ Marysville.....	5,461	¹ San Bruno.....	1,562	Population.....	368,115
¹ Eldridge.....	500	¹ Maxwell.....	500	¹ San Francisco.....	506,676	Total Popula-	
¹ El Cerrito.....	1,505	¹ Mayfield.....	1,127	¹ San Jose.....	39,642	tion Served.....	1,715,959
¹ Elmira.....	350	¹ Menlo Park.....	900	¹ San Juan.....	350		

Unmarked—Electricity only.
¹Gas only.
²Gas and Electricity.

¹Gas, Electricity and Water.
²Gas, Elect. and St. Railways.
³Electricity and Water.

⁴Electricity supplied through other companies.
⁵Gas supplied through other companies.
⁶Water supplied through other companies.

"PACIFIC SERVICE FACTS"

596,401 Consumers are now supplied with "Pacific Service." This number is greater than the population figures given to eleven of the states by the 1920 census. By the same census only eight cities in the United States exceeded in population this number of consumers.

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9

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Red Bluff

Pacific Service Magazine

Volume XIII



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The central picture of this group shows the new "Pacific Service" building shortly to be erected in Oakland. At upper left is seen the present Oakland headquarters as first occupied in 1893; at upper right, the same building with additions made in 1912. At lower left is our company's office building at Berkeley. At lower right, station "C," Oakland.

New Home for "Pacific Service" in Historic Oakland

*Company's Organization on the Alameda County Shore of the Bay Has
Long Outgrown its Present District Headquarters*

By LEE H. NEWBERT, Manager East Bay Division

The East Bay Division of "Pacific Service" is to have a new home. It has entirely outgrown the present office building at Thirteenth and Clay Streets, Oakland, which dates from 1893, though this has been added to since the original structure was erected.

The new building will be located at Seventeenth and Clay streets, four blocks north of the present office. It will have a frontage of 50 feet on Clay street, 100 feet on Seventeenth street, and will be eight stories in height, with basement. The aim of the architect has been to design what is termed a plain, dignified structure, one wholly in keeping with the ideals of "Pacific Service."

One-half of the basement will contain a display room for the exhibition of gas and electric appliances for demonstration and educational purposes. The room will be reached by two stairways leading from the main floor, in addition to the two passenger elevators. The basement will also contain a stationery room, an old records room, vault and janitors' room. A sidewalk elevator will be provided for conveying materials and supplies to and from these rooms. The basement vault will be entered from the records room, and also by means of a stairway within the vault from the vault on the main floor.

On the main floor will be located the

order department, the pay-bill department, the cash receivers, the new business department, and the executive office. The main counter will be located in the center of the room and will have passageways all around it, thereby allowing a convenient access from any point of the main floor. There will also be some display space on this floor. There will be two main entrances, one from Clay street, one from Seventeenth street. The interior woodwork on the main floor will be mahogany, the floor will be of Tennessee marble, and the walls imitation stone. The other floors will be plastered and tinted, with pine woodwork colored to harmonize with the oak furniture.

On the second floor the bookkeeping department will be located, in which department consumers' registers will be kept and bills made out. There will be no partitions on this floor except the addressograph room.

On the third floor the cashier's office will be located; also the collection department and telephone exchange. These departments will be separated by glass partitions.

On the fourth floor the accounting department will be housed. This floor will be without partitions.

The fifth floor has not yet been assigned, but will be held for future needs.

The sixth floor will contain the electric department and will be without partitions except for the superintendent's office, which will have glass partitions.

On the seventh floor will be located the system load dispatcher's quarters and the gas department. This floor will be divided by a partition separating the two departments. The chief dispatcher will have a private office with glass partitions, as will the superintendent of the gas department. In the dispatching room there will be a circular board 42 feet long, located in full view of the operators. On this board will be shown the transmission lines, power houses and substations of the company.

On the eighth floor will be located an assembly hall, with stage, library, cafeteria and kitchen. A portion of the assembly room will be used as the cafeteria where employees will be able to secure their lunches at minimum cost. Folding tables will permit of their removal when the assembly hall is needed for social purposes and meetings of the Pacific Service Employees' Association. The kitchen will occupy the space used for vault purposes on the other floors. Supplies will reach the kitchen by means of a dumb waiter connecting with the basement.

On the roof, and reached by a stairway from the assembly hall, will be located two large rest rooms, one for female employees, the other for male employees. The rooms will be constructed as far as practicable of glass, in order to make them as light and cheerful as possible.

The exterior of the building will be granite base with glazed terracotta, cream color on the first story. The other stories will be flame colored brick with cream colored terracotta trim.

The scheme of exterior lighting has been designed in a manner that, it is

believed, will be very effective. It will consist of a specially designed fixture located in the wall above and between the eighth story windows. Each fixture will contain a 1,000 candlepower lamp. Above the cornice will be located 100 candlepower concealed lights, which will brilliantly illuminate the top of the building, giving a band of light effect above the cornice line.

Two high speed elevators will run from the basement to the eighth floor. A specially designed automatic mail elevator will connect all floors with the executive office, so that mail may be distributed without the aid of messengers.

Service orders will be dispatched from the order counter by means of a compressed air tube system.

A combination automatic and manual telephone system will be installed. All calls within the building will use the automatic exchange, the operator handling only outside calls. This combination system is the latest thing in telephone work.

It is expected that the building will be completed and in use before the end of 1922. Every employee of the division will welcome the day when the present congested and inadequate quarters may be vacated for quarters that will afford ideal working conditions and, therefore, increased efficiency.

With an eye to future developments in this rapidly growing community, our company has purchased a piece of land, 50 by 50 feet in extent, immediately adjoining the new location. This will be used, at first and for some time to come, for parking automobiles; but when in the course of time "Pacific Service" on this side of the bay shall have outgrown even this latest up-to-date headquarters, the adjoining lot will be called into requisition for such additions as may be found necessary.

The Story of "Pacific Service" in Oakland

One of the most interesting evenings of a social character in the history of our organization was held in Oakland on March 25, 1914, when Mr. John A. Britton, our company's Vice-President and General Manager, addressed a large audience on the subject of "The Growth of Oakland as Measured by the Development of the Gas and Electric Industry."

In this Mr. Britton traced the development of the city that was his home for half a lifetime and, in so doing, carried his audience through the various stages of the industry that is now "Pacific Service." The following excerpts from a synopsis prepared by himself would appear of interest at the present time, when the old home of what was once the Oakland Gas Light and Heat Company is to pass from sight, to make way for a more modern structure to suit more modern requirements:

"On December 8, 1865, the city council of Oakland granted to Joseph G. Eastland and W. W. Beggs a franchise to erect a gas works and use the streets of the city for the purpose of laying down pipes to supply the city and its inhabitants with artificial gas. On June 12, 1866, the Oakland Gas Light Company was incorporated with a capital of \$150,000, and the directory was formed of the following named: Antoine Chabot as president, Joseph G. Eastland as secretary, and W. W. Beggs. On September 1, 1866, property fronting on First, Second and Washington streets was purchased for the sum of \$3,300 and work was immediately started on the building of the gas works. In October, 1866, Mr. Chabot resigned as president, and Mr. Eastland was elected in his place. In November, 1866, Mr. Henry Adams

was elected superintendent of the company at a salary of \$125 per month.

"The first works built consisted of two benches of three retorts each, gas being made at that time from the only known process, namely, the coal gas process. A holder with a capacity of 10,000 cubic feet was erected. The outlet connections to the street were four inch, and mains were laid on Second street to Broadway, south on Broadway to Water street, east on First street to Franklin, northerly on Broadway to Twelfth street, and westerly on Eighth street to Jefferson. On December 1, 1866, gas was served to the people of Oakland through the mains mentioned, and the total number of consumers then supplied was fifteen.

"On February 23, 1867, a contract was made with the city of Oakland to light certain streets with gas, and the rate obtained for the same for lighting until twelve o'clock each night, by means of a lava tip burner consuming four cubic feet of gas per hour, was thirty cents per lamp per night, the light being of sixteen candlepower.

"On April 18, 1867, H. H. Haight, who afterwards became governor of California, was elected president of the company. In July, 1867, Van L. Eastland was elected superintendent to succeed Mr. Adams, who was transferred to Stockton, gas works having been established there by Mr. Joseph G. Eastland and Mr. Freeborn. Mr. Van L. Eastland remained superintendent of the company until his decease in September, 1895.

"Among the men not so far mentioned who ruled as presidents during the period of the company's growth were: W. W. Crane, who also served the city of Oakland as mayor; J. West Martin, the banker, also mayor of Oakland in his

turn; John W. Coleman, the miner, who also was president of the San Francisco Stock Exchange, and Captain Daniel E. Martin, the San Francisco banker. James Moffit, father of Dr. Herbert Moffit and Mr. James K. Moffit, of San Francisco, was a director of the company.

"In 1872 property adjoining that first acquired, and fronting on First street and occupied by Captain Wall as a residence, was purchased by the company and the residence transformed into an office building.

"The average daily output of the plant for the year 1867 was 5,000 cubic feet of gas. This may be contrasted with the average daily output in 1913 of approximately 7,000,000 cubic feet.

"At the close of 1867 there were sixty consumers of gas; at the close of 1913 there were 60,000.

"In September, 1877, the gas mains of the company were extended to the city of Alameda, the mains running along First street to Webster, and by a submerged pipe across the estuary at that point, thence along the causeway to Clement avenue and to the location of the present holder in the city of Alameda.

"In January, 1874, the first dividend on the capital stock was paid of twenty-five cents per share per month on 10,000 shares then issued.

"In January, 1875, there was purchased from the Ghirardelli estate block No. 3, bounded by First, Second, Grove and Jefferson streets, where are now located the present company's holders, compressor plant and purifiers.

"In July, 1878, the capital stock of the company was increased to \$3,000,000, and on the same date the office was moved from the works on Second street to Ninth street, just east of Broadway. The gross revenue from sales of gas for the year ending July 1, 1878, was \$181,122.44, and there were at that time 46 miles of mains

laid and 1,801 consumers served, the total output of gas being 44,250,000 cubic feet for the year—an average of 120,000 cubic feet per day. The price of gas during that year was \$4 per thousand.

"In December, 1878, Twelfth street, from Broadway to Harrison, was lighted with gas for the first time. In August, 1879, the first installation of gas stoves was made, these being stoves manufactured in England and known as the Fletcher stove. This marked the first use in California of gas for heating and cooking.

"In December, 1880, the Lowe process of water-gas manufacture was installed. It was the forerunner of the present oil gas process, anthracite coal from Pennsylvania, with California crude oil, which had just then been discovered, being the fuel used.

"In September, 1882, the gas offices were moved to the southeast corner of Ninth and Washington streets.

"In September, 1885, the first high pressure distribution of gas of which there is any record in the world was made from the gas plant at First and Washington streets to the holder in Alameda, a pressure of five pounds being used on the line and a delivery obtained of 4,000 cubic feet per hour at the holder in Alameda.

"On January 1, 1885, the first electric lighting plant in Oakland was operated. This consisted of a 150 H. P. Thompson slide valve non-condensing engine, a battery of return tubular boilers and three 25-light arc machines, housed in the building at Second and Washington streets, now used as a warehouse.

"In June, 1888, the offices were moved to 904 Broadway.

"In September, 1888, a Westinghouse alternating machine of 1,300 light capacity was installed and a new plant erected on the corner of First and Grove

streets, where is now located Station 'C,' this plant being abandoned in 1909.

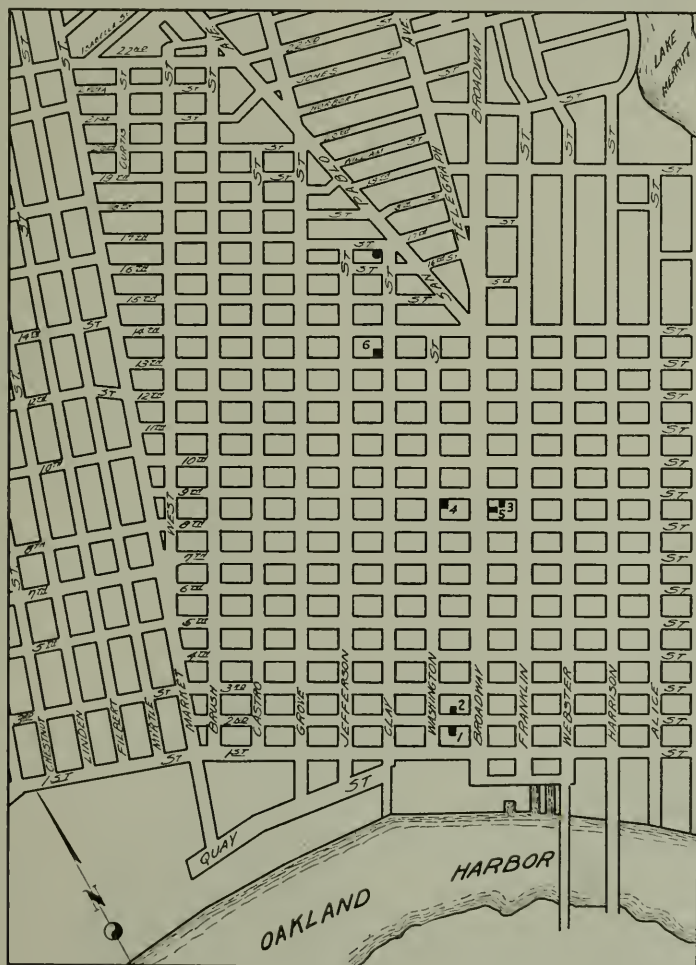
"In February, 1892, a holder, called holder No. 7, was built on the lot on the corner of First and Jefferson streets.

"October 8, 1892, the cornerstone was laid for a new office building, at the corner of Thirteenth and Clay streets. In September, 1893, the company entered into occupancy of its new building, and 'Pacific Service' is housed there today.

"From 1892 to the present time the progress of the Oakland Gas Light & Heat Company has kept pace with the constantly growing advancement of both Oakland, Alameda and Berkeley.

"In the year 1903, Messrs. John Martin, Eugene J. de Sabla, Jr., and R. R. Colgate, representatives of the California Gas and Electric Corporation, which had been formed to take over the operating hydro-electric companies in the north-central part of the state, approached the officers of the Oakland company and after some negotiations purchased the property of the company, and it has since been operated as a subsidiary company of the California Gas and Electric Corporation."

An account of this lecture, illustrated with rare views of the Oakland of early days, appeared in our May, 1914, issue.



The progress of "Pacific Service" in Oakland, as indicated by the various headquarters locations, from the first habitat on Second Street, near Broadway, to the latest under construction at Clay and Seventeenth Streets.

New 6,000,000 Cubic Foot Holder for Gas Station "B" Oakland

By HARRY J. SMITH, Construction Engineer, Gas Department

Work has been started on a 6,000,000 cubic foot gas holder to be erected at Gas Station "B," First and Market Streets, Oakland. The contract for its construction and erection has been awarded to the Bartlett Hayward Company of Baltimore, Md., and the cost will be, approximately, \$500,000, including foundation and 36-inch inlet and outlet connections.

At the present time the total storage capacity of the Oakland gas plant is 4,000,000 cubic feet with a maximum sendout of 16,540,000 cubic feet on January 21, 1922, which is 24 per cent of the maximum sendout and is a very small margin to insure safety as well as to give adequate service. This 6,000,000 cubic foot holder is to be installed to provide sufficient storage capacity so as to give continuous gas service to our consumers in East Bay division.

The holder will be of the telescopic type, with five lifts and steel water tank, and is designed to withstand a wind velocity of 100 miles per hour. It will have a diameter of 219 feet, with a height of 211 feet with all five lifts cupped. It will occupy a ground area of 37,668 square feet.

The foundation is to be a wood pile concrete slab structure and will be designed to withstand 2,700 pounds pressure per square foot.

To construct the holder will require 5,500,000 pounds, or 2,750 tons, of steel. It will take a steamer or 5,000 tons dead weight to deliver the steel to this coast. The first shipment will leave Baltimore February 25th, and will be delivered ready for erection in Oakland March 20th.

General dimensions for this holder will be as follows: first section, 204 feet 3 inches diameter by 36 feet 0 inches high; second section, 207 feet 2 inches diameter by 36 feet 0 inches high; third section, 210 feet 1 inch diameter by 36 feet 0 inches

high; fourth section, 213 feet 0 inches diameter by 35 feet 9 inches high; fifth section, 215 feet 11 inches diameter by 35 feet 9 inches high; steel tank, 219 feet 0 inches diameter by 36 feet 6 inches high.

The holder when fully inflated will give the following pressures: first section, 5.29 inches; first and second sections, 7.16 inches; first, second and third sections, 9.76 inches; first, second, third and fourth sections, 11.66 inches; first, second, third, fourth and fifth sections, 13.27 inches.

The steel tank will be made of seven courses of steel plates of the following thicknesses and weights: lower course, 1 35/64-inch plate weighing 63.16 pounds per square foot; second course, 1 23/64-inch plate, weighing 55.50 pounds per square foot; third course 1 5/32-inch, plate, weighing 47.20 pounds per square foot; fourth course, 59/64-inch plate weighing 37.64 pounds per square foot; fifth course, 21/32-inch plate weighing 26.79 pounds per square foot; sixth course 13/32-inch plate weighing 16.58 pounds per square foot; seventh course, 7/16-inch plate weighing 17.85 pounds per square foot. The riveted joints in these courses will be developed to 92.5 per cent, which is necessary to keep down the thickness of the plate, as you will observe that the bottom plate has a thickness of over 1 1/2 inches.

All of the structural steel shapes and plates No. 9 and heavier in thickness that enter into the construction of the holder, tank and guide frame will be of open hearth steel, having an ultimate strength of from 55,000 to 65,000 pounds per square inch. All of the light plates less than No. 9 in thickness will be of soft blue gas holder steel, having a tensional resistance of from 50,000 to 60,000 pounds per square inch.

The Bartlett Hayward Company's building program calls for the completion of this holder by October 1st.

Increased Service Facilities for Chico; Our New Gas Plant

By I. B. ADAMS, Manager de Sabla Division

The demands made upon present day public utilities for service adequate to the public needs are constant and unrelenting. The result, so far, has been a general realization of the necessity for all-round improvements in both plant and equipment facilities. It goes without saying that these improvements are a direct benefit to the public as well as to the particular utility involved.

"Pacific Service" is no exception. In both its gas and electric service our company is constantly improving and adding to its manufacturing and distributing systems, and even then it has to put its best foot forward to keep pace with the growth of the State. And so it comes to pass that every growing community in "Pacific Service" territory is a scene of constant activity in the way of reconstruction and extension work.

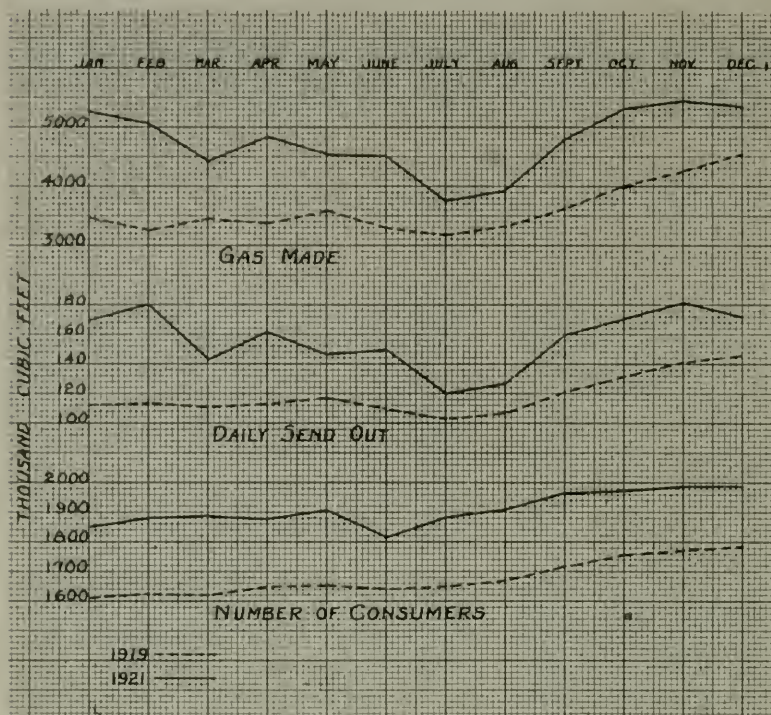
Like most other California cities Chico at the present time is rapidly increasing in population, and the demand for housing accommodation is far in excess of the supply. During the past few years many new residences have been built, and this, considered together with the growth of various industries which are springing up on all sides, has made it imperative for our company to provide greater manufacturing and dis-

tributing facilities everywhere to meet present as well as future demands for gas as fuel. The accompanying curve illustrates by comparison the increase in the amount of gas manufactured, the average daily consumption and the number of consumers in our city during the twelve calendar months of 1921 over corresponding months of the year 1919.

Now, the Chico gas plant dates from 1905 and came to be found entirely too small to meet the needs of the community; consequently, it was decided to build a new and larger plant. This has recently been accomplished and with successful result. The new plant consists of a new modern gas generator, consisting of primary and secondary shells, both of which are 6' 6" in diameter and capable of producing 250,000 cubic feet of gas per day. The old generator was also thoroughly overhauled and placed in



"Pacific Service" gas works at Chico, recently overhauled and improved.



Comparative chart showing growth of our company's gas business in Chico during the past two years.

good serviceable condition and is used as a standby, capable of generating 180,000 cubic feet of gas per day. The combination gives Chico a gas generating capacity of 430,000 cubic feet per day, and will insure service to its consumers for some years to come.

The main building houses both gas generators, two horizontal tube boilers, four steam oil and water pumps, steam engine, air blowers, wash boxes, and storage bin for lamp black. The lamp black pits, scrubbers, exhausters, and purifiers are located outdoors. The plant has storage capacity for 40,000 gallons of fuel oil, and has two holders for gas having a combined capacity of 165,000 cubic feet. It is of a steel frame building covered with corrugated iron, with cement floors and foundations, and is painted on the exterior the "Pacific Service" standard color, buff and maroon. The interior is painted a dark green, and is equipped with many large windows,

furnishing plenty of light and ventilation. The building presents a very pleasing appearance and is a decided asset, architecturally, to the environment in which it is located.

The plant occupies approximately one-half of a city block. Cement walks and curbing have been built around it and all vacant ground planted to blue grass. Gas lamps mounted on ornamental concrete pillars furnish illumination at night. Lamp black, the residue of the

oil after the gas has been extracted, is used as fuel under the boilers for the generation of steam which furnishes the motive power for the oil and water pumps and air blowers.

The Chico gas plant ranks high as a modern generating plant, one of which Chico as well as the company can be proud. The distribution department during the year 1921 laid over 18,000 feet of 2" pipe and 5,300 feet of 4" pipe in new extensions and betterments of service within the city limits. This department makes daily tests of the gas sold to consumers in order to see that it has the proper heating values, and that it does not contain objectionable material such as too much sulphur, naphthalene, etc. Gas is delivered at an average pressure of 5". Since the installation of the new plant, with larger mains, and "tie ins" in the distribution system, Chico is getting gas service second to none in the State.

A Trip to the Mountain Quarries, in the American River Canyon West of Auburn

By WILLIAM J. CRABBE, Drum Division.

We must steal a ride over the railroad, and it will have to be in a "V" bottomed gondola car, commonly known as a "bat-tleship," as no passengers are allowed;

is connected 2-8-2, which means that it has two pilot wheels, eight drivers and two trailers, and is built for power, not speed or good looks. We are now on our



General view of the Mountain Quarries, showing crushing plant, bunkers, etc., and two of the three "glory holes." Also "Pacific Service" 60 k. v. pole line.

so let's be hoboes for once and enjoy the trip.

We flip the car at Flint, which is one mile west of Auburn, and start down-grade over a standard-gauge track on a train of six or eight cars drawn by a Mikado-type locomotive. This locomotive

way, and in thirty minutes will cover seven miles of thrills. Before we reach our destination we will cross eighteen trestles, some of which are over one hundred feet high, follow the American River canyon, cross the river close to the confluence of the north and middle forks

over a concrete bridge which is a marvel of engineering skill and beauty. The bridge was built by the Duncanson-Harrelson Company in 1910. During the trip we will have dropped over 1,100 feet in elevation on a uniform grade of 3 percent.

Alright; we have stolen the trip, now we are the guests of Mr. H. M. Power, who has charge of the "Mountain Quarries," a subsidiary company of the Pacific Portland Cement Company whose main works are located at Cement, in Solano county. The rock from these quarries is nearly pure lime, which is one of the principal ingredients of cement. We are informed that a gross of around 450,000 tons of rock will be shipped out this year. This will not all go into cement, however, as the choicest rock will be used in the manufacture of beet sugar. We understand that the lime rock is used for bleaching purposes and is not one of the ingredients of sugar. The rock is carefully sorted by hand, after it has passed through screens which let only eight-inch rock through. Then more of the choice rock is screened to four-inch size and shipped to the Selby smelters for fluxing purposes. The bulk of the rock, however, is crushed to an average three-inch size and shipped to the mill at Cement, where it is ground to a fine powder, mixed with the right proportion of clay and other ingredients used in manufacture of cement.



View of the American River Canyon, on the way to the plant.

After inspecting the office buildings, rock crushers, etc., we will take a hike up to the "glory holes." These are great cavities in the hillside, with a hole or chute in the center which terminates in a tunnel several feet underground. There are three glory holes; the upper, or third one, has a chute nearly six hundred feet deep. The rock has been blasted out for eleven years, now, and sheer cliffs hundreds of feet in height are left standing as side walls where the lime rock has been taken out. The men working on the side walls look like tiny flies as they bore into the rock with drill steel twenty feet in length. The cumbersome Burley drills have been replaced by jack hammers. It used to take from three to four men to operate or move a Burley and keep it anchored to the cliff, it takes but one to operate or move the jack hammer. The drills, or jack hammers, used are the Sullivan No. D. P. 33 for deep hole drilling and weigh about sixty-five pounds, while the Sullivan No. D. P. 32 for pop hole drilling weigh approximately forty pounds. The Denver Clipper No. 50 is another type of drill and is used for deep hole drilling.

The method of getting the rock down from the side walls to the "glory holes" is quite simplex. Several holes are drilled in a row along the rim a few feet from the edge of the sidewall, these holes ranging from ten to twenty feet in depth;



Cable suspension bridge on highway, one of the first bridges built across the American River in the '50s.



Confluence of the north and middle forks of the American River flood waters.

they are then filled with high power explosive and when ready the blasts are set off simultaneously by the use of a battery. Great slabs of rock are thrown into the glory holes by these blasts, the slabs are in turn redrilled with "pop" holes, and blasted into the proper size for handling.

The quarry uses a carload of dynamite per month. This ranges in strength from thirty to sixty percent.

Compressed air is used to operate the drills at 115 pounds pressure. Two Sullivan compressors, class W. T. 16 x 10 x 14", each using a 100 hp motor, and one Chicago pneumatic compressor, size 17 x 10 x 12", using a 125 hp motor, are used to compress the air. The two Sullivan compressors are located in the crusher house at the mill, while the Chicago pneumatic compressor is located in the quarry and is used as a booster for the pressure.

Two steam shovels are in use. One, a Marion No. 36, is used for face work on No. 1 "glory hole," the other, a No. 18 Osgood, is used in No. 3 "glory hole" for stripping the upper dirt from the rock. One-half mile of 24" gauge track has been built along the top of the hill and upon this a six-ton Milwaukee type 11-30 gas locomotive and several two-ton dump cars are used to take away the stripping as it is dug by the steam shovel.

A 12 x 20' tunnel runs underground for 1,500 feet, this being the means

for getting the rock from the chutes. As the rock is blasted from above it falls into the chutes, at the bottom of which are gates or traps; the dump cars are run under these traps and loaded by the simple process of lifting a lever, letting the rock down by gravity. There is a double track in the tunnel and the cars are hauled by a grip cable and are stopped and dumped automatically by means of a trip. When the cars are loaded they are taken to the crusher plant, where rock is

dumped into the maw of a No. 9 McCully crusher. This crusher will take any rock up to eighteen inches in diameter and break it to eight inches or smaller, will crush 240 tons of rock per hour, and takes a 200 horsepower motor to run it. From the crusher the rock passes through other crushers until the proper size is obtained. A conveyer belt then takes the crushed rock to a bunker where it is finally loaded into the aforesaid "battleship." A dust collector in the crushing plant takes away as much as 90 percent of the dust.

Now it is time to eat. So, let's see how the boarding house appeals to us. Large airy dining rooms, with spotless service and tables, entice us to linger and taste the fine raisin bread, the fresh milk and lemon cream pies that are not excelled by the St. Francis, especially when we have a mountain (mounting) appetite. This is not all they serve by any means, there is always plenty of everything. A commis-



Concrete bridge for railroad connecting Mountain Quarries with main line of Southern Pacific.

sary is run in conjunction with the boarding house, much the same as the army canteen. A varied stock of supplies are carried at reasonable prices.

Club rooms are furnished, with all the late magazines. The club has its own stationery and letterheads, and expects to sport an electric piano with pool and billiard tables in the near future.

An average of two hundred men are employed at the Mountain Quarries. Two shifts are worked, of eight hours each. The men have comfortable living quarters; medical attendance is at hand at all times, with hospital facilities. Considering, however, the nature of the work, the amount of powder handled and rock flying during the blasts, the attending physician has very little to do. This is due to the splendid precautions and safety-first methods used by the Company. At all times there are men watching the various operations from lookout points.

These men are as watchful for the safety of their fellow workers as the prison guard is of his prisoner.

The Mountain Quarries have a connected load of over 800 horsepower, of which 325 horsepower is for operating compressors, 300 horsepower for crushers. Hoists, blowers, pumps, and small motors complete the total. A 60 K. V. sub-station, with three 125 KW Stanley transformers and a fourth 125 KW transformer for spare, is located close by the plant, and is fed by a regular "high" line, so high in fact that the wires at the center of some of the half-mile spans can hardly be seen from the ground. This line taps the Alta-Sacramento line at the Auburn Sub-station, and, as we expected right from the start, it is fed by "Pacific Service."

Now that we have seen the Quarries a hike back through the scenes of early day romance will not be amiss. The American river canyons abound with



Inside a "glory hole." Note men looking like flies on the side walls, also twenty-foot drill steel standing ready for use in piercing the heart of the limestone. Each "shot" blasts down hundreds of tons of rock.

legends and stories of the days of gold and '49. Gold was first found in California by Marshall at Coloma, which is located on the south fork of the American river, only fifteen miles from the scene of this story. A very few months elapsed before all the river channels were crowded with miners and prospectors. Towns sprang up overnight in the most out-of-the-way places, roads were built in most inaccessible places at a cost that would make the budget for our present day highways look small. Placerville was at that time the "hub of the universe," so far as the miners were concerned, and all roads built out of the American river lead to that point. It is said that towns of ten to twenty thousand inhabitants existed in these canyons, so it is not unreasonable to believe and repeat a little bit of local history.

Across the river from the Quarries plant may be found all that is left of the old workings of the great "Crevasse"

mine, supposed to have been one of the largest and richest placer mines on the river at that time. A tremendous flume was built to carry the water around the diggings, and at one time good pay dirt was struck and things began to boom. Above the diggings an arm of the hillside jutted out, over which the course of the river had run. This was known as "murderers' bar" and on this bar a town sprang up of nearly ten thousand inhabitants. The Wells Fargo Express Company established a branch office—an absolute sign of prosperity and stability—a wagon road was built to connect with the Placerville turnpike, and tons of gold was supposed to have been shipped. The town was in the midst of a rip-roaring, wide-open, sporting boom, when, like Pompeii, it was swept out of existence. A sudden flood raised the already swollen river more than twenty feet, swept over "murderers' bar" and wiped out the town completely. It is said that not a soul was left to tell about it. There is an old painting in Auburn which is said to represent this town, and evidences of some catastrophe are still found and can be seen near the supposed location. It is also said that a safe containing \$50,000 in gold dust was washed down the river and never found.

Let us not stop and try and locate this safe, but continue on our way. The river bottom is full of mystery and old junk. As we wander down stream we come across, first, an old derrick skip, a piece of a timber mortised and put together with wooden pegs, probably a part of the

large flume or some other like it. Here is an old pan all rusted through, but which we can still use to try our luck for "colors." There we see a portion of a gear wheel rough cast, looking as though it might have come around the Horn. Now we see an old Chinaman with a small sluice box, a split bamboo brush and a horn, used in cleaning out the crevices. Further down we see a regular old "flapjacker" sourdough with an unwashed shirt and tobacco juice all over his beard. Yes, they are all there today. Now we come to the confluence of the rivers again. Crossing the north fork is a modern steel bridge, the road crossing to Forest Hill, Michigan Bluff and Westville. Across the main branch of the river is the old suspension wire bridge built in 1858. It is the road crossing from Auburn to Placerville and Georgetown. The bridge was one of the first built across the river and is yet in a good state of preservation.

Now we are on the road back to Auburn. The town is three miles distant by this road, with an average grade of 11 percent, a real, live, snaky mountain road. Lots of traffic goes over it and the county end of it is kept up in very good shape. We arrive at Aeolia Heights, a residential section of Auburn, from which a very wonderful view of the High Sierras is afforded. This place is also noted for its Easter morning "sunrise services."

This ends our trip and we hope we are not too tired of this one to try another later.





Z. FLOYD



NIEL McARTHUR



JAMES McCOOL



JOHN McCLOSKEY



JAS. O'DONNELL



WILLIAM GALVIN



J.D. BUTLER



JOHN J. DEUSCHLE



RICHARD PHELAN

The "Pacific Service" pension roll contains 64 honored names. Here are nine of those whose long and faithful service has entitled them to honorable retirement.

The "Pacific Service" Roll of Honor

Heading the honor roll of "Pacific Service" are 64 names of men whose long and faithful service to our company has been rewarded by their honorable retirement with provision for their declining years.

Our company's pension system underwent revision last fall and the important changes, resulting in increased pension allowances for the great majority of old employees, were set forth in an article from the pen of our president, Mr. Wiggington E. Creed, and published in the October issue of Pacific Service Magazine. As said before, those receiving the benefits of this revised pension system number 64. They are honored names and "Pacific Service" wishes to do them honor.

It is proposed to make our readers acquainted with these men and their service records. In doing this we call attention, modestly withal, to this emphatic instance of what is now generally recognized in all up-to-date business enterprise, namely, that long and faithful service shall have its just reward, that no man shall grow old and gray in the service only to be cast aside when weight of years compels retirement from active occupation.

Opposite this will be found the portraits of nine of the oldest, in terms of service, of our company's pensioners. Their records follow:

Zacheus Floyd. 83 years of age, having been born on the 19th of July, 1838. Entered the service of the San Francisco Gas Company, August, 1862, retiring on a pension the 1st of August, 1910.

Niel McArthur. In his 80th year, having been born in 1842. Entered the service of the Sacramento Street Railway, Sacramento, July, 1873. At the time of retiring on a pension, February 1, 1917, was in the track department, Sacramento District.

James McCool. 73 years of age, having been born August 22, 1848. Entered the service of the San Francisco Gas Light Company, Potrero, October, 1876. At the time of retiring on a pension, November 1, 1916, was still serving at the Potrero gas plant.

John McCloskey. 67 years of age, having been born on June 29, 1854. Entered the service of the San Francisco Gas Company in the Gas Department, May, 1877. At the time of retiring on a pension, April 1, 1917, was in the Gas Distribution Department, San Francisco Division.

James O'Donnell. 71 years of age, having been born on November 1, 1850. Entered the service of the San Francisco Gas Light Company as a coal passer, in October, 1880. Retired on a pension January 1, 1917, at which time he was serving

in the Gas Distribution Department, San Francisco Division.

William Galvin. In his 73rd year, having been born in 1849. Entered the service of the Pacific Gas Improvement Company, 1882. At the time of retiring on a pension, November 1, 1916, was employed in the San Francisco Division.

J. D. Butler. 65 years of age, having been born September 15, 1856. Entered the service of the San Francisco Gas Light Company, March, 1884, and at the time of retiring and for many years past was Auditor of the San Francisco Division. This is the last name on record to be pensioned, "Joe" only consenting to lay aside his duties the first of the present year.

John J. Deuschle. 76 years of age, having been born June 22, 1845. Entered the service of the Oakland Gas Light and Heat Company, October, 1884. At the time of retiring on pension, June 1, 1918, was in the electric department, East Bay Division.

Richard Phelan. 76 years of age, having been born January 1, 1846. Entered the service of the Pacific Gas Improvement Company, at the Potrero, in 1885, and at the time of retiring on pension, February 1, 1920, was employed in the San Francisco Supply District.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION

Educational Program.

The steam course classes are progressing, the interest being shown by the students exceeding even the most sanguine expectations. The list of enrollments is increasing daily.

The electrical course is being distributed, the text being furnished by the Educational Committee. The text of the course is supplementary to the book "Croft's Practical Electricity." In order that the text may be of value it is necessary that the student have a copy of Croft's book at hand. No copies of the text are being sent to those who have not got the book, which is supplied by the P. S. E. A. at \$2.00 net to the student, part of the cost being borne by the Association.

The accounting course will be ready for distribution March 1st, the commercial course February 22nd and the gas course later.

Membership.

The paid up memberships of 1922 as of February 4th are but 100 less than those of 1921 on May 16th. After one year's trial the local section idea has been approved beyond question by the membership.

Program for 1922.

The annual snow outing will be held at Truckee on February 25th and 26th. Arrangements have been made to use the dining car and Pullman service of the Southern Pacific at Truckee in lieu of hotel accommodations. Tobogganing, skiing and, without doubt, skating will be on our sports program. A dance will be held in Truckee Saturday evening, also, a bonfire on the snow. That a large crowd will be on hand is beyond doubt, as on every hand the making of plans for the trip are noticed.

The local section advertising and attendance committee chairmen are handling the details in the various sections,

receiving their instructions from the Sacramento and Drum section representatives.

In May the spring outing will be held, tentative plans providing for our journeying to Redding, there to be the guests of Shasta-West Side.

In June we will have our annual dinner, most famous of our events, and this year to be held in the Civic Auditorium in San Francisco. It may be of interest to state that a meeting of the program committee was held on February 7th and that right now plans are being made for taking care of this undertaking. The Civic Auditorium in San Francisco and the P. S. E. A.—a combination hard to beat!

North Bay held a very well attended meeting at Odd Fellows' Hall, San Rafael, on the 28th of January. Despite the rain a large crowd was on hand, enjoying the entertainment and dance. The refreshments were prepared and served by the ladies. The next meeting is scheduled for early in March.

The regular monthly meeting of San Jose section was held in the Masonic Temple, San Jose, Saturday evening, January 28th. About one hundred were in attendance.

After the business meeting was closed Mr. E. M. Frelson of the General Electric Company gave a very interesting and instructive talk on the manufacture of the mazda lamp. The remainder of the evening was spent with an enjoyable program and dancing.

Rumor has it that Mr. Lane, chairman of San Jose section, is to be permanently located in San Francisco, moving there to in the near future. Mr. Jeppeson of Redwood City, vice-chairman, will take over the reins and will continue to keep San Jose "up and coming" in the future as it has been in the past.

Pit chapter is still growing, the membership at present exceeding 150. The chapter has a distinct place in the life of the community and with the hearty co-operation of the ladies of the social committee adds immeasurably to the enjoyment of life for the folks at "the Pit."

The educational program has met with the hearty approval of the men on the job, and by the time the spring thaws come great progress should have been made by the students of the steam and electric courses. Long winter nights are conducive to study; they have them at Pit.

An educational meeting was held at Modesto on February 8th, the lecture being on "Automobiles, their care and operation." San Joaquin section is to the fore in interest shown in the educational program, every community being represented on the enrollment list.

Sacramento and Drum sections are both busy with the "snow party" plans and the enthusiasm shown at meetings in both sections augurs well for the success of the Truckee outing.

Consideration of every angle of the sick benefit plan idea is being given by the committee appointed to report on the proposition. That a fool-proof workable plan will be the product of their labors in the near future is beyond doubt. The project is of such import that mature consideration of every detail must of necessity be given before presentation to the executive committee.

The benefit and loan committee has been keeping up its good work, and while for the best of reasons we cannot write in detail of the many cases in which assistance of many kinds has been rendered, we can state that its work is noteworthy and that through its activity a greater helpful interest in the other fellow is seen all about us. We can feel

justly proud of our benefit and loan committee.

San Francisco section held its first meeting of the year in Native Sons Auditorium on Monday evening, January 30th. About three hundred were in attendance.

Section chairman C. E. Larrabee called the meeting to order, and after a short address of welcome announced that arrangements had been made whereby the Annual Association Dinner would be held in San Francisco on June 24th in the Civic Auditorium. This announcement was received with much appreciation.

The chairman also announced that on February 28th the Association would hold an "auto night" under the auspices of the Educational Committee, and as many novel features had been arranged for this meeting it would make it worth while for all to be present.

Mr. Larrabee then introduced Mr. W. M. Henderson, chairman of the parent body, who gave a very interesting talk on the various activities which have been outlined for the present year. He also gave many interesting details relating to the educational courses and illustrated lectures prepared for the benefit of the members and of which it is hoped as many as possible will take advantage.

Mr. Henderson's address was followed by a short musical program given by Misses Enalia Codington and Norine McDonough and Mr. J. L. Gilbert, after which the floor was cleared and the rest of the evening spent in dancing.

East Bay section calls attention to the coming event of the season, the production of the "Mikado," by the "Gas House Terriers Club" of Gas Station "B," under the auspices of East Bay section. Every employee and stockholder of the company is cordially invited to attend—March 16th, 8 p. m., at Municipal Auditorium. Key Route trains stop at entrance.



The Financial Side of "Pacific Service"

7 PER CENT NOTES CALLED FOR REDEMPTION

The Company has elected, under the terms of the agreement securing its issue of \$10,000,000 of 7 per cent notes due May 1, 1925, to call the entire issue for redemption on May 1st, 1922, at 101 and accrued interest. The refunding of these notes will be accomplished through the issuance of a like par value of First and Refunding Mortgage 20-year 6 per cent Bonds, Series "B," which were recently sold to the National City Company and which found a ready market among investors. The substitution of a security bearing interest at the rate of 6 per cent per annum for the 7 per cent issue is, of course, of decided advantage to the Company and affords ample evidence of its strong financial position and of the improved condition of the bond market. As a matter of fact, the 6 per cent bonds were sold to the investment bankers at a higher price than was obtained for the 7 per cent notes less than two years ago.

The Company has extended to holders of these notes the privilege of presenting them for redemption at an earlier date than May 1st, 1922, and at a somewhat higher premium, offering 101.25 and accrued interest for notes presented on or before February 15th, and 101.15 and accrued interest for notes tendered from February 16th to 28th, 1922, inclusive. A great many investors are taking advantage of this offer, and a considerable number, by reinvesting the proceeds of their notes in First Preferred Stock at \$87.50 per share, are assuring themselves of a permanent investment bearing approximately the same yield as the interest rate on the temporary obligation.

COMPANY HAS MORE THAN 49,000 SECURITY HOLDERS

There are now upwards of 49,000 holders of this Company's securities, of whom almost exactly two-thirds reside in California; 17,466 bondholders and 15,156 stockholders, or a total of 32,622 investors, being residents of this State. The following table shows the distribution of the Company's bond and stock holders:

	INSIDE CALIFORNIA		OUTSIDE CALIFORNIA		TOTAL	
	NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT
Bondholders.....	17,466	58.56	12,356	41.44	29,822	100
Stockholders.....	15,156	78.87	4,058	21.13	19,214	100
Total.....	32,622	66.52	16,414	33.48	49,036	100

Of the \$74,868,700 par value of the Company's preferred and common stock outstanding at the close of 1921, \$49,112,900, or 65.6 per cent, was held in this State, as shown by the following tabulation:

	TOTAL STOCK	
	PAR VALUE	PER CENT
Held in California.....	\$49,112,900	65.6
Held outside California.....	25,755,800	34.4
Total.....	\$74,868,700	100.0

Recent figures as to the amount of our funded debt held in this State are not available, but it is believed that the proportion held by California investors is approximately the same as in the case of the stock.

The above statistics are really an understatement of the facts, the actual number of those financially interested in the Company's welfare far exceeding these figures. Every outstanding bond issue of the Pacific Gas and Electric Company is a legal investment for savings banks in California, as well as in many other States, and consequently depositors in savings banks which hold the Company's securities have a more or less direct financial interest in its affairs. It is not an uncommon thing for as much as one-third of an entire issue of our bonds to be purchased by various banks, trust companies, and other fiduciary institutions, so that the number of savings bank depositors and others interested in the ownership of these securities must aggregate a very large total. Insurance companies are also heavy investors in the bonds of this as well as other public utility companies. For example, a single one of the largest and strongest insurance companies in the country holds upwards of \$1,000,000 par value of the bonds of the Pacific Gas and Electric Company and its subsidiary corporations, the ownership of which is thus disseminated among a large number of policy holders throughout the country. The old superstition that large corporations are owned by a few wealthy individuals, which never had much foundation in fact, but which still receives credence in some quarters, certainly meets but little support in the case of this enterprise.

THE RECORD OF SEVEN YEARS' GROWTH

This Company has a record of growth which is probably surpassed by few, if any, public utilities in the country. As shown by the following table, in the past seven years its gross operating revenues have more than doubled, increasing 118.4 per cent. In the same interval sales of electricity increased 569,817,000 kilowatt hours or 126.0 per cent. The magnitude of this growth may be appreciated from the statement that this increase in sales of electric current was greater than the entire hydro-electric output of the states of California, New York and Washington during the month of December, 1921, and was actually equivalent to 43.4 per cent of the total electricity generated by water power in the entire country during that month. Sales of gas also showed a very substantial increase, although, as might be anticipated from so long and well established an industry, this increase was not as rapid as in the case of sales of electric current.

Year Ended December 31	Gross Operating Revenue	Sales of Electricity K. W. H.	Sales of Gas Cu. Ft.	Number of Consumers December 31	Number of Stockholders December 31
1914	\$16,912,688	452,004,000	7,648,252,000	378,705	2,898*
1915	18,530,301	494,091,000	8,325,619,000	403,545	7,080
1916	18,615,498	521,553,000	8,174,225,000	421,794	7,614
1917	19,813,381	587,144,000	8,537,925,000	450,657	8,141
1918	22,595,516	628,923,000	9,255,961,000	477,012	8,242
1919	25,938,372	658,449,000	9,792,341,000	520,619	8,813
1920	31,475,372	1,042,266,000	10,644,650,000	569,359	14,020
1921	36,939,474	1,021,821,000	11,483,551,000	598,969	18,204
Gain in 7 yrs., Increase, Per Cent.	\$20,026,786 118.4%	569,817,000 126.0%	3,835,299,000 50.1%	220,264 58.1%	15,306 528.1%

*As of June 3, 1914, date of initiation by Pacific Gas and Electric Company of the policy of direct sale of securities to customers.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF THE
PACIFIC GAS AND ELECTRIC COMPANY

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The Pacific Gas and Electric Company desires to serve its patrons in the best possible manner. Any consumer not satisfied with his service will confer a favor upon the management by taking the matter up with the district office.

VOL. XIII FEBRUARY, 1922 No. 9

EDITORIAL

"It is time now that the people should realize that corporations cannot, by legerdemain or in other ways, do what any business firm or man cannot do, and that is to continue to do business at less than cost; also, that corporations are just as honest and, in many instances, more economical than the average business combination of any character."

The foregoing is quoted from an editorial published in *The Daily Pioneer* of Bridgeton, N. J., under the heading "Crippling Public Utilities." This editorial was incited by conditions prevailing in the community in which the newspaper circulates, particularly in the case of the local traction company, which is about to go out of business because of inability to maintain service under a five-cent fare rate in the face of vastly increasing costs of operation. The editorial deprecated this state of affairs and called public attention to the case of the local gas light company which, during the war, had applied to the State Public Utility Commission for permission to increase its

service rate. The application, of course, drew forth violent protest from certain quarters and public meetings were held and funds collected to defeat this increase. Such a tempest was raised, in fact, that the protest prevailed and the increased rate was not allowed.

The company continued to give service as best it could, but it was unable to maintain its plant in proper shape, and the result of it all was that the Public Utility Commission of the State was again applied to and an increase was allowed which brought the rate up to a point very much in excess of what had been requested in the first application referred to. Moreover, this very much increased rate still maintains and will have to maintain for some time, because of the necessity of making good the depreciation and losses due to failure to recognize the company's legitimate needs at the proper time, "just as," to quote again from the editorial, "every prejudiced attempt to interfere with legitimate corporations and the proper conduct of their business costs the dear public money."

In the present issue of *PACIFIC SERVICE MAGAZINE* will be found the portraits and service records of a number of our oldest employees whose names are upon the company's pension roll. There are 64 of these and it will be found that their terms of service with our company range from 20 to nearly 45 years. Every man on the "Pacific Service" honor roll has a proud record to look back to, and the pride with which they all may look back to their records is shared not only by the management but by every member of our "Pacific Service" family. For, not a name on that list but speaks for loyalty, fidelity to self as well as to employer, the sort of service that has its best reward, perhaps, in the knowledge of work well and faithfully performed.

"Pacific Service" is proud of its honor roll, including, as it does, not only those who through weight of years have sought honorable retirement which, under the pension system referred to, means provision for their declining years, but also, those younger in the service whose names appear in the classified lists which are

published at the beginning of each year when the time comes for distributing service buttons. Loyalty, after all, spells efficiency in the long run better than any other quality.

Still more honors for "Pacific Service" men. With the appointment of four additional vice-presidents and, with that, a further readjustment of its interior working system, our company has completed the plan of reorganization which was entered upon some fifteen months ago when from "Pacific Service" headquarters there was issued an announcement of the creation of certain offices and a general rearrangement of departmental duties and responsibilities.

The four new vice-presidents appointed are: A. H. Markwart, former Director of Engineering, who becomes Vice-President in Charge of Engineering; W. G. Vincent, Jr., former Executive Engineer, who becomes Vice-President and Executive Engineer; Willis S. Yard, former Engineer of Gas Department, who becomes Vice-President in Charge of Gas Construction and Operation, and R. E. Fisher, former Manager of Commercial Department, who becomes Vice-President in Charge of Sales. These four new vice-presidents, with the two appointed in October, 1920, namely, P. M. Downing, Vice-President in Charge of Electrical Construction and Operation, and F. A. Leach, Jr., Vice-President in Charge of Public Relations and Service, are termed the management officers of the company and in the performance of their respective duties will be responsible to Vice-President and General Manager J. A. Britton. The executives of the company will remain as before, namely: President, W. E. Creed; Vice-President and General Manager, John A. Britton; Second Vice-President and Treasurer, A. F. Hockenbeamer; Secretary, D. H. Foote; Assistant Treasurer, Leroy Moore, and Assistant Secretary, Chas. L. Barrett.

In the company's departmental organization, a further change is announced. Mr. W. B. Bosley, formerly attorney at the head of the Law Department, becomes General Counsel of the Company. Mr. Leo H. Susman takes the position of attorney of the Law Department while

former State Senator Chas. P. Cutten, as attorney of the Rate Department, will have exclusive charge of all matters between the company and the State Railroad Commission.

The working committees will consist of: President's Advisory Committee; Engineering Committee; Gas Engineering Committee; Research Committee; Employees' Welfare Committee; Central Safety Committee; Appropriations Committee.

The Research Committee is a new feature and will be made up of the Vice-President and Executive Engineer, Vice-President in Charge of Engineering, Vice-President in Charge of Gas Construction and Operation and Vice-President in Charge of Sales.

It is with great pleasure that we note, from time to time, that the men at the head of affairs in various sections of our departmental activities are not only honored within our ranks but are well considered in the communities in which they severally reside.

The announcement was made recently that Mr. Lee H. Newbert, Manager of our East Bay division, had been elected a member of the Board of Directors of the Oakland Chamber of Commerce. From West Side Division, about the same time, came the news of the election of Mr. H. B. Heryford, manager of that division, to the vice-presidency of the Red Bluff Chamber of Commerce, with appointment upon the advisory board of that body.

This seems to us a pretty good record for two men whose residence in their respective communities is of but recent date. Mr. Newbert was transferred from the head office to Oakland in the fall of 1920, while Mr. Heryford moved from Chico to Red Bluff about the same time.

Another honor for a "Pacific Service" man is found in the news which comes from Marysville that Mr. E. C. Johnson, manager of our Colgate division, has been elected president of the Yuba County Chamber of Commerce. Mr. Johnson has resided in Marysville now for some eleven years, and his rise in our company's service has been rapid as well as sure.

Tidings From Territorial Divisions

East Bay Division

Oakland is the fastest growing industrial city on the Pacific Coast, as revealed by the 1920 United States census. In the five years ending 1920 Oakland's factory growth was the greatest on the Pacific Coast and ten times that of Eastern industrial centers. We respectfully call attention to the following figures:

Persons engaged in manufacturing increased in San Francisco, 45.7 per cent; in Los Angeles, 87.9 per cent; in Oakland, 175.3 per cent.

Capital invested in manufacturing increased in Los Angeles, 56.2 per cent; in San Francisco, 124.1 per cent; in Oakland, 226.5 per cent.

Horsepower used in manufacturing increased in Los Angeles, 46.7 per cent; in San Francisco, 61.4 per cent; in Oakland, 168.5 per cent.

Salaries and wages paid in manufacturing increased in San Francisco, 122.2 per cent; in Los Angeles, 176.5 per cent; in Oakland, 378.6 per cent.

Values of products in manufacturing increased in San Francisco 157.1 per cent, in Los Angeles, 170 per cent; in Oakland, 326.5 per cent.

Owing to the rapid growth of the division and large increase in gas consumption, the Company has authorized the expenditure of approximately one million dollars for additions and betterment in the gas departments. For particulars see elsewhere in this issue of PACIFIC SERVICE MAGAZINE

Saturday, January 21st, 1922, East Bay division sent out to consumers 16,550,000 cubic feet of gas, the largest send-out ever made and which was due to the unusually cold weather. January 28th, 15,004,000 cubic feet of gas was sent out, making a record for Sundays. Station "B" feels proud of this.

On account of the seriousness of the unemployment situation, it behooves each of us to help, as far as we are able, some deserving man in need. The sight at the municipal wood yard, Oakland, on

any morning is pitiful. A group of men are chosen each day to work on the highways, some going to work without breakfast and some without breakfast or lunch either. Too much cannot be said about this unfortunate condition. We have not hesitated to help the starving Armenians, Belgians, Russians, etc., so now let us help our own.

If you can give a man with a family an hour's work, a half day's work, or more, phone to the municipal wood yard, and a deserving man will be immediately sent out to you. Any work will do, cleaning basements, cutting wood, cleaning windows, nothing turned down.

Fifteen steamships a week, on the average, representing seven different lines, are now regularly loading and unloading cargoes at Oakland docks, as compared with only one or two vessels weekly a year ago. This is making Oakland in reality, instead of merely in prediction, the city "whereship and car connect."

The merits of Oakland as an export point are grasped farther inland than formerly. Much of the Fresno raisin crop is going east by sea for the first time.

PASSING OF AN HISTORIC FIGURE.

Joseph Herzog, the man who built the first brick building in Oakland, recently passed away. Mr. Herzog was among the romantic figures of the pioneer days, coming to California in 1850 and locating in the East Bay District. He laid the first street through Berkeley, Herzog Avenue, later becoming Alcatraz Avenue, at its builder's suggestion. The first real estate tract in Alameda was credited to him.

Herzog was one of the three guards who stood beside Casey and Cora when they were executed in the vigilante days. He was a lieutenant of the vigilance committee of 1856. He was an inventor and constructor of a cable car.

Pittsburg, Contra Costa County, population 6,000, is a thriving and rapidly growing industrial city of the East Bay Division, destined, we believe, to become in the near future of as great importance to the western coast and California as is its namesake in Pennsylvania to the eastern coast.

Pittsburg's location at the point where the Sacramento and San Joaquin rivers meet, forming Suisun bay, gives it a key position at the gateway of river and bay traffic, as all water carriers to and from the bay cities must pass this way from the loading wharves of the Sacramento and San Joaquin rivers. Seagoing vessels regularly dock at the wharves, bringing lumber and coast products for manufacture and reshipment.

Three lines of railroad enter the city, two lines of steamships. Although the city is yet in its infancy as a manufacturing center, the industries already located here emphasize the truth in all that is claimed for the place as a factory and distributing point.

More than 2,000 persons are employed at factories, whose annual payroll is upward of \$3,000,000. Among the more prominent of industrial enterprises located there are:

Redwood Manufacturers' Company, Columbia Steel Company, Great Western Electro-Chemical Company, Pioneer Rubber Mills, Lanteri Shipyards, National Metals and Chemical Company, F. E. Booth Company, Western California Fish Company, San Joaquin Fish Company, Independent Fish Company.

Pittsburg is proud of the modern and extensive plant of the Columbia Steel Company, which operates here an up-to-date rolling mill with several hundred employees. In addition to this activity it also manufactures high grade castings. By modern and efficient methods of manufacturing and by continually improving its plant and maintaining a high order of skilled and expert workmen there is no prospect other than that of progress and advancement for this industry.

A few years ago almost all rolling mill products and steel castings were made at eastern plants and shipped to the coast, thereby entailing much expense and delays. Now it is possible, through the

Columbia Steel Company, to obtain quick deliveries, excellent quality and lower prices than ever before possible. As a consequence the entire Pacific Coast is benefited and the industries using such products greatly stimulated.

Richmond leads every city in California in manufacturing, except the three largest, San Francisco, Oakland and Los Angeles. Richmond's manufacturing investment, totaling \$31,649,000, is almost twice that of Berkeley, a third greater than that of San Diego and far ahead of Sacramento, Stockton, San Jose and other big "second size" cities.

The plant of the Republic Steel Package Company of Cleveland, on Chesley Avenue, has progressed so far that the concrete frames of the first building will be removed next week.

The Proctor & Gamble Company of Cincinnati, Ohio, makers of Crisco, Ivory soap and other famous products, have begun work in Richmond on the fifty-six acre site where their West Coast plant and shipping terminal are to be located. The corporation will spend from \$2,000,000 to \$3,000,000 in this improvement.

The fact that this company assists employees to own their own homes on a plan that makes ownership easy for them is one of the best features about the corporation's location in Richmond. It will assure scores of new homes.

The Princeton Knitting Mills, one of Richmond's solidly founded industries and which is sending its goods all over the Pacific Coast, is to be doubled in capacity, it has been announced.

The growth of this factory is due to the excellent quality of goods produced and their style and beauty. They are becoming widely known.

Mrs. Louis M. Scott of Saratoga has let a contract to K. J. Henning to erect a large, modern apartment house on Brooks avenue in the apartment house section east of Twenty-third street. It is in the district where the Westdin apartments, finest in Richmond, were

recently erected. August Moissen of Oakland plans two apartment buildings, one two blocks from the city hall.

A contract has been let by Wilbur Pierce, attorney and capitalist, for construction of a new United States postoffice building, to cost \$35,000, on lots owned by him.

The cattle outlook in the Livermore district is better than for the last few years. Ranges are in better shape than within the memory of the older old-timers, the feed being not only abundant but of fine quality. The crop outlook in hay, grain and alfalfa is great. Moisture has been abundant and well distributed, and the ranges and pastures are in prime shape. The grape growing industry has received a great impetus this season. So profitable has this industry proved that a total of 700 additional acres has been planted in the Livermore district. Much of this is divided into small tracts, being the result of small landowners settling in the district and entering the grape growing industry.

Almond growing, too, is proving another profitable venture, and many new almond orchards are being set out.

During 1921, the stores and business houses of Livermore have had prosperity and report banner businesses. More wholesaling from surrounding towns has been marked during the past year.

Investigation has brought to light a record which Hayward poultry enthusiasts think will prove monumental in egg laying animals. The flock of 3,300 chickens at the ranch of Foo Lee, on Dublin boulevard, produced 33 cases of eggs last week. This would average one case to every one hundred hens for the week. A case carries thirty dozen eggs.

Hayward as a successful poultry raising district is an established fact, according to figures compiled by the Poultry Raising Producers' Association, showing that there are approximately 2,100,000 chickens in the Hayward district. This number of chickens does not include the chicks that were hatched during the year, as many of them went to outside points.

Another industry has been added to the Irvington section in the transforming of 18 acres of uncultivated land two miles south from here into the Halstead nursery. It will employ about thirty men the year round and will furnish flowers and early vegetables for the market.

This is one of the first greenhouses in the West to be heated entirely by electricity. Newly invented machines will furnish artificial heat, gentle lights will coax the flowers to grow by night, and in some cases the rays of electricity will be turned on during hours of darkness to deepen colors or mature bloom faster.

J. C. J.

San Joaquin Division

Stockton has the distinction of having been awarded the first government school of agriculture in the United States. This school is for the purpose of training ex-service men along agricultural lines, and is located on Rough and Ready Island, two miles west of Stockton. There are twelve hundred acres of rich delta land, the property of Albert Lindley, leased to the Government which will be broken up into three and five acres to be allotted to ex-service men and their families. These will be given extensive instructions by experts in farming and at the expiration of one year those qualifying will be given financial assistance in the purchase of a farm to be located in the vicinity of Stockton.

Proper housing facilities will be provided at the school for men and their families together with schools, churches, a hospital and a theater. "Pacific Service," as in the past, is already on the job.

Ground is being broken for a new two-story building in which the Stockton Chamber of Commerce will occupy the entire second floor. The building alone will cost approximately \$60,000 and will be completed some time during May.

San Joaquin County will expend \$277,000 for the new road work during the present fiscal year, according to the program adopted by the Board of Supervisors. Upon the completion of the new work there will be a total of 470 miles of paved highway in the county.

A hearing has been held by Major U. S. Grant III on the application of the city of Stockton for changes in the harbor lines to provide a location for the proposed civic center. The city plans to create a steamboat harbor 600 by 900 feet.

Freight valued at \$42,203,211 was transported on the San Joaquin River in 1920, according to the report just published by the Chief of Engineers, U. S. Army. A large portion of this freight moved between Stockton and San Francisco. The principal items of tonnage were crushed rock, fuel oil, general merchandise, grain and mill stuffs, lumber, onions and potatoes.

A 10 per cent increase was reflected by Stockton postal receipts during 1921. Postal figures are considered to be a reliable indication of business conditions.

San Joaquin County has taken fourth place among all the counties of the United States in agricultural production.

Industrial gains for Stockton were shown by the official government figures. These placed a value of manufactured products for the year 1919 at \$30,676,000 against \$11,293,000 in 1914. In 1914 there were 157 establishments, with 2,537 employees, while 1919 census gave 208 establishments, with 4,733 employees.

Work has begun on the Western Pacific spur track which will open up the north side of Stockton Channel to factory sites and industries. This will be a big boom to the property and, also, to the city of Stockton.

Ground will soon be broken on the new College of the Pacific 30-acre site. Before completion, one million dollars will be spent on the buildings, and it is figured that \$100,000 will be put in circulation in Stockton annually by the addition of this college.

From all indications the people on the west side of the San Joaquin River and in the vicinity of the great Patterson colony are going in for deep well pumping. This is proven by the fact that during the

year just closing four deep turbine pumps have been installed, with an aggregate capacity of 300 horsepower. At the present time quite a number of these wells are being considered. The installations for the past year are for the purpose of irrigating alfalfa; the additional plants spoken of, however, are for trees and vineyards.

It may be interesting to some of the oldtimers who pioneered the line into the Patterson Colony from Tracy, some eleven years ago, that there are now under intensive cultivation some 13,000 acres of land. The crops are quite diversified, consisting of alfalfa, peaches, almonds, Thompson seedless grapes, etc.

It is also quite an interesting fact that the Patterson colony as a whole is being used for the promotion of the chicken industry, to which climate, soil, etc., are very favorably adapted. It is now estimated that there are in excess of 100,000 chickens in the colony and "Pacific Service" plays her part in this industry as well. One of our consumers, Mrs. V. V. Allen, last year tried out the electric incubator with great success, having advised us that her per cent of hatch with the electric incubator was greater than had been her experience with any other. Further, she stated, the chicks had considerable more vitality.

Another of our consumers at the time of this writing, Mr. H. S. Arnold, is raising chickens for meat, using an incubator and electric brooders. He reports his success due to the thermostat on the brooders. With the thermostat the temperature is reduced from the hatching temperature gradually day by day for a period of three to six weeks, which eliminates the danger of sudden changes.

S. J. D.

De Sable Division

The Industrial Arts building of the Chico State Teachers College, constructed at a cost of \$32,000 and equipped with machinery costing \$8,000, is open for classes.

The building is 80 by 160 feet, built of brick and designed by the state engineering department. It consists of three shops and two classrooms. The money

for construction and equipment was raised by an appropriation from the last legislature.

President C. M. Osenbaugh states that the building furnishes facilities for teaching of technical subjects warranting the granting of graduates' certificates to teach the subjects in public school. One shop is devoted to machine work and auto mechanics, one to woodwork and one to sheet metal work, given in the building.

J. W. S. Hodgdon and Carl Schreiter will be in charge of the courses of instruction open in the building it was announced.

The woodwork shop is 42 by 80 feet. Some of the machinery includes, two lathes, power sander, circular saw jointer, mortiser and tool grinders. The machine shop, 50 by 60 feet, contains two machine lathes, steel shaper, drill press, power hacksaw, welding outfit and tool grinders. The machinery en route for placement in the sheet metal shop are a bar folder, crimper, large burring machine, square shears, pipe forming machine, grooving machine and other smaller machinery.

Courses offered include two in electricity, two in auto mechanics, one in mechanical drawing, one in machine work, four in woodwork and one in sheet metal work.

I. B. A.

Colgate Division

The following tribute to our division manager appeared in the *Sacramento Bee*, issue of February 11th:

NEW LEADER OF YUBA CHAMBER BELIEVES
IN PERSEVERANCE

Marysville (Yuba Co.), February 11.—Edward C. Johnson, new President of the Yuba County Chamber of Commerce, and one of the youngest men who have filled that position, has adopted a motto to follow during his reign. It is "Stick or You're Stuck."

"Ed" Johnson, as the new President is best known, succeeded Arthur Gorwood, who was forced to resign on account of private affairs. He is a native of this State and 35 years of age, married, and owns his own home in this city.

That his motto, "Stick, or You're Stuck," is not new in his life, is evidenced

in the fact that he has risen from the position of "hole-digger" with the Pacific Gas and Electric Company, taken when he was 17 years of age—to the position of manager of the Marysville district, which he has now held about five years. He has been with the company eighteen years; eleven of which he has spent in Marysville.

Four months of that time he spent in a hospital, and thereby hangs a tale proving that Johnson has the grit necessary in the head of a boost body, or leader in any emergency.

One winter night in 1913, Johnson, who then was a lineman with his company, and another man were sent to a point twelve miles east of Marysville to repair a line affected by a heavy wind and rain storm. Both men climbed a pole as the strong wind swayed it. It broke off at the bottom. The other man was killed. Johnson's thigh was badly fractured, and he was more than a mile from the county road where the horse and wagon, in which they made the trip from Marysville, were tied. That distance he covered by crawling, and when he reached the field fence he tore off a board, from which he sharpened a splint and bound up his injury. He does not know how he managed to reach the seat of the wagon, but he did. He drove in the driving storm three miles before he reached a habitation from which to get assistance to take him to a local hospital.

West Side Divison.

The company has just recently completed the laying of approximately 13,000 feet of new gas mains in the city of Red Bluff, thereby removing a source of many complaints. Before the new mains were installed, the gas trouble man was kept busy complying with demands from consumers.

The old mains were not of sufficient capacity to take care of all the consumers properly, and a good many of the services were too small, being only $\frac{3}{4}$ inch. These service pipes, in service for over twenty years, have become clogged up. We are now replacing the $\frac{3}{4}$ inch service with new $1\frac{1}{4}$ inch pipe and when this work is completed the cry of "no gas" will be heard no more. When the new

mains were put into service it was found that conditions were so much improved that the old high pressure mains were cut over on low pressure, making the whole gas distribution system at Red Bluff one of low pressure.

Work is progressing rapidly on the new out-door substation at Willows. The company is spending \$56,000 on this new equipment, and when completed it will be a valuable addition to "Pacific Service." Three 1,500 KVA transformers, with 11 KV out-door automatic switches on all outgoing feeders, are being put in as well as a 60 KV out-door oil switch. These new transformers have a tertiary winding on which the 2,300-volt town distribution and street lighting load will be carried. This special transformer winding eliminates the necessity of another bank of transformers. An automatic regulator will be provided on the 2,300-volt circuit, and a switch house will house all the 2,300-volt equipment and 11 KV control.

It is expected that the substation will be completed some time in March and when completed there will be two secondary voltages on the distribution, namely 11 KV on all suburban lines and 2,200 volts on the town circuits. R.W.M.

We hope the following tribute to "Pacific Service" as rendered out West Side way may prove of interest to our readers:

December 22, 1921.

Mr. H. B. Heryford,
Division Manager,
West Side Division,
Pacific Gas & Electric Co.,
Red Bluff, California.

Dear Sir:

We wish to commend the Tehama Agent, Mr. F. M. Clawson, for his very efficient workmanship in the maintenance of power lines and electrical factors connected with our supply on the property, the Doyle Ranch, Tehama County.

Although this is the termination of another year of good service, we want to remark further, that Mr. Clawson also handled the lines over the Elder Creek

Ranch, in former years, in the same satisfactory manner.

Wishing you and the members of your Division in Red Bluff and Corning a Merry Xmas and Happy New Year, we beg to remain,

Sincerely yours,

FINNEL LAND COMPANY,

By (Sgd) John Lillie,
Superintendent.
H. B. H.



Sacramento Division

IN MEMORIAM

Employees of Sacramento Division are mourning the loss of Joseph Beer, who died suddenly of heart failure on Monday, February 6, 1922, at the age of 76 years. Everyone who knew "Joe" will remember him as a kind and gracious fellow-worker who served faithfully in the ranks of the company for nineteen years. At the time of his death he was in the collection department.

North Bay Division

IN MEMORIAM.

F. J. Griffin passed from among us on Friday, January 27th, in San Rafael. He was among the oldest employees of the Company, having served it faithfully for 26 years. In his work he had made a number of friends who shall never forget his kindness in the years he served as one of us. His death occurred after a period of failing health spreading over the last four years.

Drum Division

Manager Cooper received the following communication at his office in Auburn a few days ago. The principle of giving

credit where credit is due would appear to warrant its publication at this time:

**PRODUCERS FRUIT CO.
OF CALIFORNIA**

Main Office
901 California Fruit Building,
Sacramento, California.

Newcastle, Calif.
Jan. 14th, 1922

Pacific Gas & Electric Co.,
Auburn, Cal.

Gentlemen:

Attention Mr. H. M. Cooper.

It was after 5 o'clock last night when I phoned your office that an automobile had run into the P. G. & E. pole near the church and broke one of the wires which supplies my residence with light, and asked that it be fixed some time today.

It was just 45 minutes later, while we were eating dinner by coal oil lamps, that your men came and fixed the wires. This is what I call "Service with electrical dispatch" and I want you to know that I am one man who knows how to thoroughly appreciate such service.

I want specially to thank my young friend, George Smith.

Yours very truly,

J. H. RANDOLPH.



San Francisco Division

GAS DISTRIBUTION DEPARTMENT.

The closing six months of the year 1921 found the Gas Distribution Department going at top speed, caused by the abnormal building conditions which were at their peak in this period.

The demand for services was greatest since the Panama Pacific Exposition in 1915.

The summary of our work for the year includes the installation of 34,218 feet of mains and 1,735 services. The tags handled through our service desk were 260,297, consisting of meter sets, complaints, removes, changes, locks and unlocks. The Meter Repair Department repaired 46,199 meters, which is an in-

crease of 36 per cent over the year of 1920.

TRANSPORTATION DEPARTMENT.

The driver who is guided by courtesy as well as by the laws of right of way, seldom gets into trouble, while the bull-headed party, always insisting on his "rights," frequently gets bumped for his insistence. The happiest people in the world and those who get the most genuine satisfaction out of life are those whose joy it is to be courteous, and a little of that medicine applied to running an automobile would work wonders in decreasing our accidents.

E. C. W.

NEW BUSINESS DEPARTMENT

The New Business Department has inaugurated regular monthly meetings of the employees dealing in sales of appliances and solicitation for new business commencing with January, 1922.

These meetings are held at seven o'clock at the Industrial Gas Laboratory when a program is arranged to discuss problems that are coming up regularly. A committee has been formed to analyze all constructive criticisms and obtain ways and means to better the working conditions of the New Business Department. It seems the practical way to get business.

A demonstration is to be made at each meeting of some particular appliance, alternating from gas and electric, so that the men may become familiar with the different appliances installed and recommended by the Company, and in that manner intelligently discuss them with prospective customers.

Some of the telephone inquiries received by the New Business Department:

How much does it cost to operate an electric heater that sells for \$12.00?

Is it dangerous to let a light burn all night?

How much per kilowatt hour do you sell your gas?

If I buy stock in the company do I get my gas free?

F. T.

Gas Men of the Pacific Coast Open 1922 Season in San Francisco

Members of the Pacific Coast Gas Association held their first sectional reunion of the present season on the evening of Saturday, February 4th, at the Pacific Gas and Electric Company's gas industrial laboratory at 241 Stevenson street, San Francisco. This took the form of a get-together dinner, with a program of entertainment and instruction.

These sectional reunions have become an established feature of the association's annual program of activities. It is the custom to hold one in San Francisco, one in Los Angeles and another in Portland, Ore. The Association, in its membership, embraces every phase of the gas industry on the Pacific Coast, from the public service corporation, manufacturing and distributing gas to consumers, to the manufacturers and salesmen of gas appliances. At these reunions, therefore, there are gas men from every part of the Pacific Coast territory, the best representations in point of number, of course, coming from the three central points named.

At the Pacific Gas and Electric Company's industrial laboratory in San Francisco every kind of gas appliance is on exhibition, stoves, heaters, furnaces and every other kind of appliance displaying gas as an industrial fuel. It makes, therefore, a unique setting for gatherings of the kind. The experiment was tried last year and the result was one of the most successful reunions in the history of the P. C. G. A., which is now in the 29th year of its existence.

About 150 members assembled and discussed an appetizing menu prepared on the premises, one of the hotel ranges on exhibition being called into requisition for the purpose. Henry Bostwick of San Francisco, President of the P. C. G. A., was in the chair, while the program of entertainment was under the direction of W. M. Henderson, the Association's able and energetic secretary. Two speakers from outside of the Association were on the program. Mr. Eustace Cullinan, the well-known attorney of San Francisco who is at the head of the Greater California League, delivered an able discourse upon proposed legislation affecting the interests not only of the light and power

corporations of the State but, also, the people of the commonwealth themselves, and in emphatic terms he urged the people of California not to be led into errors of political judgment such as had been responsible for the unfortunate conditions in North Dakota and elsewhere. Mr. Chas. W. Duncan, advertising manager of Foster and Fleiser Company, himself a well-known artist, a lecturer at the State University and generally recognized as an exponent of the doctrine of color, made a very original talk upon color and its effect, through the eye, upon the mind and the energies. Duncan is a master of his subject, and his address was listened to with intense interest.

Following these speakers Mr. Fred Pelle of the gas industrial department of "Pacific Service" gave a remarkable demonstration of burning gas in an open flame submerged in a tank of water. This experiment was made possible by the use of the Kemp premixer. The tank used for the purpose had a glass slide, so that the burning gas could be observed by the spectators. An original industrial gas burner was used and the apparatus started, and after the burner warmed up it was plunged into the water and held at a depth of 10 to 12 inches. It continued to burn all the time it was in this position, the products of combustion passing up and escaping at the surface of the water. The lights in the room were extinguished and the effect was most spectacular, the reflection of the flame upon the water giving it a phosphorescent appearance. Altogether, it was a most interesting demonstration.

The next sectional gathering will be in Los Angeles in June. There will be another one in Portland some time in July. The annual convention of the Pacific Coast Gas Association will be held this year in Santa Barbara during the third week in September. The program committee is already at work on the papers to be presented at the convention and, as happens every year, the promise is made that for all-round interest, as well as advantage to the gas industry as a whole, the Santa Barbara convention shall eclipse all its predecessors.

What Is a Factor?

The sugar industry of Hawaii, in its principal business relations, functions through an agent. This agent usually finances the growing crop, purchases the raw sugar at harvest, ships and disposes of the output according to contracts placed early in the season. The continuity of this agency relationship is usually assured by stock ownership in the plantations served by the agent.

This agent is a factor—a sugar factor. It usually engages in other related activities. It may handle plantation supplies. It may act as an insurance broker. It may conduct wholesale and retail merchandise departments. It may (and it usually does) own stock in a number of companies in which a permanent relationship is required. In turn, its own stock may be widely held among business men and firms who require a permanent relationship in the factor.

The factor offers a sound basis for investment. Such an opportunity is now available for your funds in the well-secured bonds of the Theo. H. Davies & Company, Limited. This bond pays you better than 7%; due in 15 years; price 99.50 and interest.

*Let us send you detailed information
concerning this attractive investment
opportunity*

BLYTH, WITTER & Co.

MERCHANTS EXCHANGE

SAN FRANCISCO

OAKLAND OFFICE: EASTON BUILDING

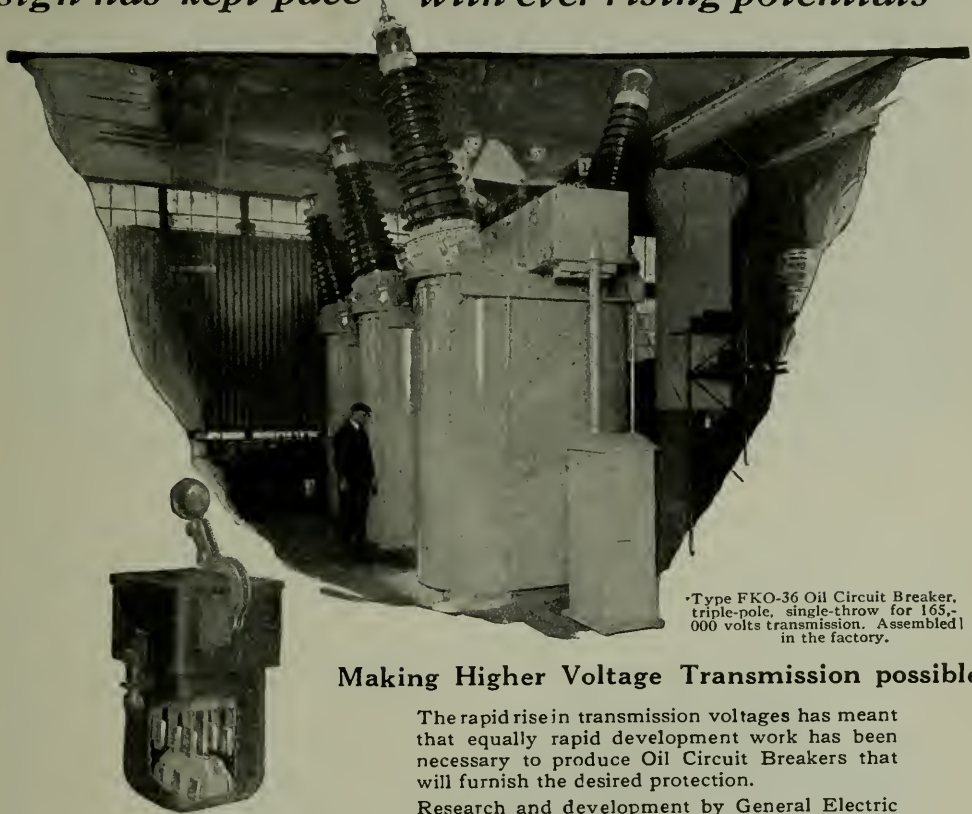
New York

Seattle

Portland

Los Angeles

The possibilities of greater power transmission have been realized because protective apparatus design has kept pace with ever rising potentials



Type FKO-36 Oil Circuit Breaker, triple-pole, single-throw for 165,000 volts transmission. Assembled in the factory.

Making Higher Voltage Transmission possible

Type FP-15 Non-Automatic Oil Circuit Breaker T. P. S. T., 600 volts, 50 amperes.

The rapid rise in transmission voltages has meant that equally rapid development work has been necessary to produce Oil Circuit Breakers that will furnish the desired protection.

Research and development by General Electric Engineers have produced a comprehensive line of Oil Circuit Breakers, covering practically every known requirement. From the small 600-volt, FP-15 type weighing about 12 lbs. used to control induction motors they extend to the giant extremely high voltage type of Oil Circuit Breakers designed for the proposed 220 KV transmission lines. The breaker shown in the illustration is to be placed in operation on a 165 KV system and is the highest voltage breaker so far constructed.

Whatever your requirement there is a G-E Oil Circuit Breaker to fill it.

Consult the G-E Switchboard Specialist in your vicinity.

General Electric Company

General Office
Schenectady, N.Y.

Sales Offices in
all large cities

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When writing please mention PACIFIC SERVICE MAGAZINE

J. W. KERR, President

Established 1869

C. D. STEIGER, Secretary

Steiger & Kerr Stove and Foundry Co.

OCCIDENTAL FOUNDRY

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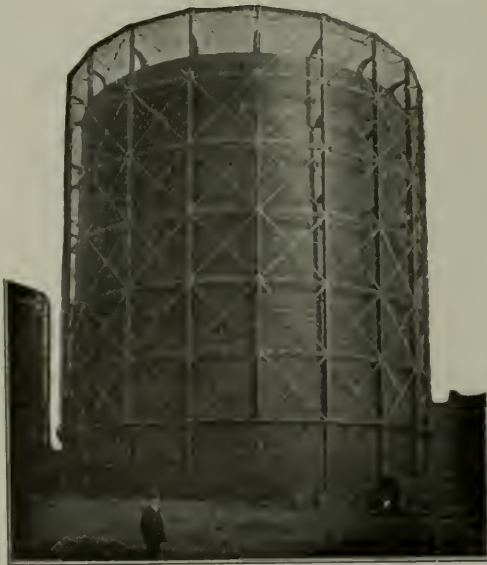
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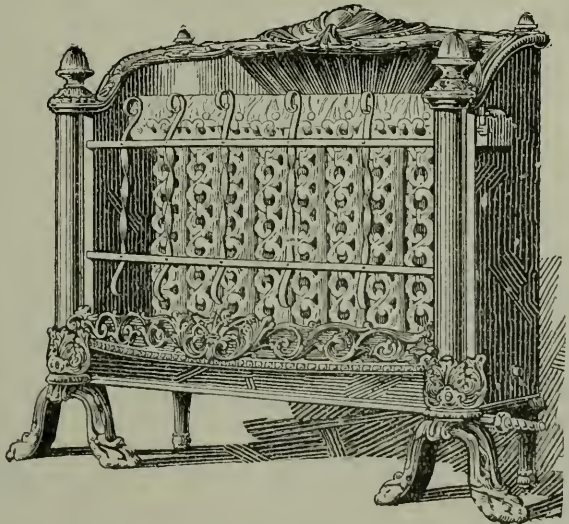
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

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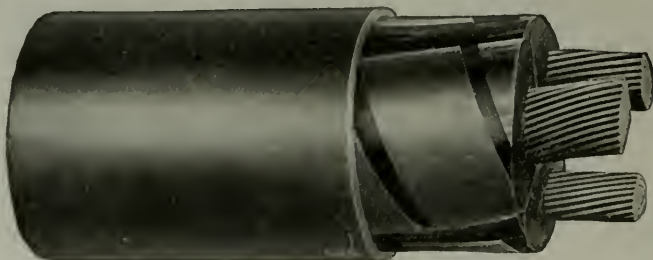
No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

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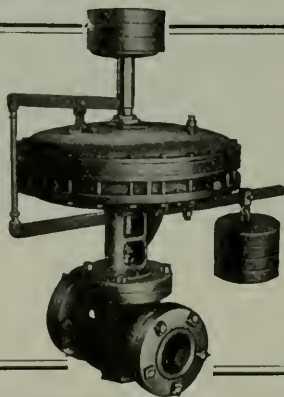
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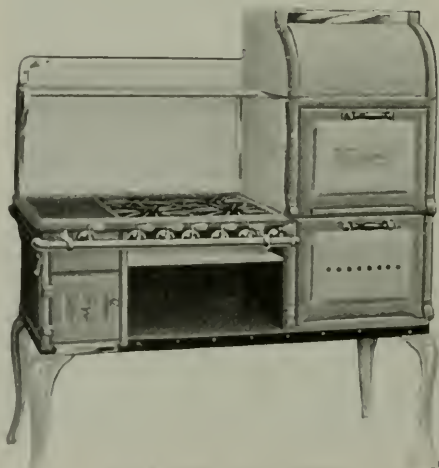
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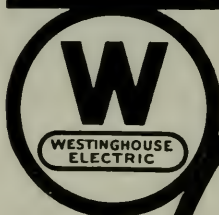
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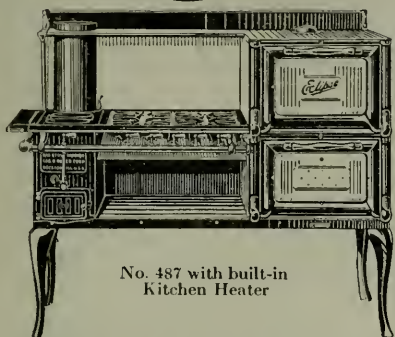
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1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

DIRECTLY			INDIRECTLY		TOTAL	
No.	POPULATION		No.	POPULATION	No.	POPULATION
Electricity.....	171	1,120,503	60	153,449	231	1,273,952
Gas.....	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic).....	18	61,719	8	15,488	26	77,207
Railway.....	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
*Alameda.....	28,806	*El Verano.....	400	Meridian.....	200	*San Leandro....	5,703
*Albany.....	2,462	*Emeryville.....	2,390	*Millbrae.....	300	*San Lorenzo....	500
*Alvarado.....	1,000	*Escalon.....	600	*Mills.....	400	*San Martio.....	250
Alviso.....	517	*Esparto.....	271	*Mill Valley.....	2,554	*San Mateo.....	5,979
*Amador City..	377	*Fairfax.....	250	*Milpitas.....	300	*San Pablo.....	500
Anderson.....	750	*Fairfield.....	1,008	Mission San		*San Quentin....	3,000
Angel Island..	500	Fair Oaks.....	300	Jose.....	500	*San Rafael.....	5,512
Antioch.....	1,936	Fall River Mills	300	Modesto.....	9,241	*Santa Clara....	5,220
*Aptos.....	300	*Farmington....	300	Mokelumne Hill	900	*Santa Cruz.....	10,917
Arbuckle.....	900	*Felton.....	300	*Monterey.....	5,479	*Santa Rosa.....	8,758
*Atherton.....	500	*Folsom.....	2,000	*Morgan Hill..	646	Saratoga.....	500
*Auburn.....	2,289	*Forestville....	250	Mountain View	1,888	Sausalito.....	2,790
*Barber.....	500	*Fresno.....	45,086	Mt. Eden.....	200	*Sebastopol....	1,493
*Belmont.....	375	*Gilroy.....	2,862	Napa.....	6,757	Shasta.....	200
Belvedere.....	616	*Glen Ellen....	1,000	*Nevada City...	1,782	*Shellyville....	200
Benicia.....	2,693	*Gonzales.....	500	Newark.....	500	Sheridan.....	250
*Ben Lomond..	400	*Grass Valley..	4,006	*Newcastle....	750	Smartsville....	300
*Berkeley.....	56,036	*Gridley.....	1,636	Newman.....	1,251	*Soledad.....	400
*Biggs.....	683	*Grimes.....	500	Niles.....	1,000	*Soquel.....	400
Bolinas.....	200	*Groveland.....	500	*Novato.....	400	*Sonoma.....	801
Brentwood....	400	*Guerneville..	800	*Oakland.....	1,745	*Sonoma.....	1,684
*Broderick....	700	*Hamilton City.	250	*Oakland.....	216,261	South San	
*Burlingame..	4,107	*Hammonton....	500	Oakley.....	200	Francisco.....	4,411
Byron.....	350	*Hayward.....	3,487	*Occidental....	600	Standard.....	500
Campbell.....	600	*Hercules.....	373	Orland.....	1,582	*Stanford Uni-	
*Capitola.....	300	*Hillsborough..	931	*Oroville.....	3,340	versity.....	2,700
Carmel.....	638	*Hollister.....	2,781	*Pacheco.....	300	*Stockton.....	40,966
Cement.....	1,000	Honcut.....	500	*Pacific Grove.	2,974	Suisun.....	769
Centerville..	1,000	Hughson.....	250	*Palo Alto.....	5,900	Sunol.....	350
Ceres.....	637	*Jone.....	1,000	Paradise.....	500	Sunnyvale....	1,675
*Chico.....	9,339	*Irvington.....	1,000	Patterson.....	694	Sutter City....	250
*Colfax.....	573	*Jackson.....	1,601	*Penn Grove....	200	*Sutter Creek..	920
College City..	250	*Jamestown....	750	*Penryn.....	250	Tehama City..	196
Collinsville..	200	*Kennett.....	464	Perkins.....	300	Tiburon.....	400
*Colma.....	1,500	*Kentfield....	500	*Petaluma.....	6,226	Tracy.....	2,450
*Columbia....	200	*Kenwood.....	300	*Piedmont.....	4,282	*Tres Pinos....	300
*Colusa.....	1,846	*Keswick.....	250	*Pike City.....	200	*Tuolumne....	1,500
Concord.....	912	*King City.....	1,043	*Pittsburg.....	967	Turlock.....	3,394
*Cordelia.....	300	*Knights Ferry.	200	Pleasanton....	4,715	*Yacaville.....	1,254
Corning.....	1,449	ing.....	400	Port Costa....	991	*Vallejo.....	21,107
Corte Madera.	607	*La Grange.....	200	Port Costa....	900	Vina.....	300
*Cotati.....	200	*Larkspur.....	612	Princeton.....	3,104	*Vineburg.....	200
Cottonwood..	500	*Lathrop.....	600	*Red Bluff....	3,104	Walnut Creek..	538
Coyote.....	200	*Lewiston.....	200	*Redding.....	2,962	Warm Springs..	200
Crockett.....	1,500	*Lincoln.....	1,325	*Redwood City.	4,020	Waterford.....	250
Crow's Landing	300	Live Stock....	300	*Richmond....	16,843	*Watsonville..	5,013
*Daly City.....	3,779	*Livermore....	1,916	Rio Vista.....	1,104	Wheatland....	435
Danville.....	400	*Lomita Park..	600	Ripon.....	500	Williams.....	650
Davenport....	300	*Loomis.....	500	Riverbank.....	200	Willows.....	2,190
*Davis.....	939	*Los Altos.....	500	*Rocklin.....	643	Winters.....	903
Decoto.....	300	*Los Gatos.....	2,317	*Rodeo.....	300	*Woodland.....	4,147
*Del Monte....	300	*Los Molinos..	200	*Roseville....	4,477	Woodside.....	300
Denair.....	200	Madison.....	300	*Ross.....	727	Yolo.....	350
*Dixon.....	926	*Manteca.....	1,286	*Sacramento...	65,908	*Yuba City....	1,708
*Drytown.....	200	*Maricopa.....	600	*Salinas.....	4,308	Total Cities	
*Duncan's Mills	200	*Martinez.....	3,858	*San Andreas..	1,183	and Towns...1,347,844	
Durham.....	250	*Marysville....	5,461	*San Anselmo..	2,475	Population... 368,115	
*Dutch Flat..	750	Maxwell.....	500	*San Bruno....	1,562	Total Popula-	
*Eldridge.....	500	*Mayfield.....	1,127	*San Francisco.	506,676	tion Served..1,715,959	
*El Cerrito... 1,505		*Menlo Park... 900		*San Jose.....	39,642		
Elmira.....	350			*San Juan.....	350		

Unmarked—Electricity only.

—Gas only.

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—Gas, Electricity and Water.

—Gas, Elect. and St. Railways.

—Electricity and Water.

—Electricity supplied through other companies.

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In the year 1921, over thirteen billion cubic feet of gas was manufactured in the Company's twenty gas plants. This was sent through 3,168 miles of gas mains to 297,270 consumers in 58 cities and towns, serving a population of 1,150,000.

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Operates 20 Gas Plants.



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THE ONLY MONTHLY OF THE PACIFIC OCEAN AND PACIFIC COAST SAN FRANCISCO



TORRENT OF ESCAPED WATER FROM LAKE SPAULDING SPILLWAY

VOL
12

MARCH 1922

No
10

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Pacific Service Magazine

Volume XIII



Number 10

Yearly Subscription \$1.50 Single Copies, Each 15 Cents

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The Anaconda Copper Mining Company's rolling mill at Great Falls, Mont. Reading left to right, from top down, these views show: (1) wire bars entering heating furnace; (2) wire bars, red hot, leaving furnace; (3) one end of wire mill, showing stranding machine in the foreground; (4) front end of mill, showing "roughing rolls;" (5) annealing furnace; (6) wire drawing machine; (7) side view of cabling machine; (8) rear view of cabling machine; (9) cable reel stored in warehouse ready for shipment.

Transmission of Hydro-Electric Energy at 220,000 Volts

*The Why and Wherefore of It and the Problems Involved In Its Adoption
by "Pacific Service"*

By J. P. JOLLYMAN

Chief of Division of Hydro-Electric and Transmission Engineering

The double circuit steel-tower transmission line now under construction and destined to carry the power of the Pit River a distance of some 250 miles across the inland empire of north-central California will operate at the never before attempted pressure of 220,000 volts. What problems are involved in this, what obstacles have to be overcome and what the transmission of electric energy at this unprecedented voltage will mean to "Pacific Service," Mr. J. P. Jollyman describes in the following article.

In this connection it is interesting to know something about the conductor itself, the material of which it is composed and how it is fashioned. Mr. E. H. Steele contributes an article on copper, containing some interesting details concerning the placing of the largest single order for copper wire on record. Describing the intricate process of converting raw copper into wire and strand, Mr. R. Kennard of the Anaconda Copper Company affords an insight into the working of that company's mammoth rolling mill at Great Falls, Montana.—EDITOR PACIFIC SERVICE MAGAZINE.

Electric transmission at 220,000 volts is a subject that has received much attention in the past few years. The fact that the Pacific Gas & Electric Company has adopted this voltage for its Pit River transmission is quite well known. There are a number of important facts concerning 220 K. V. transmission which will be considered at this time. These facts will be considered under the following six points:

- 1—What it is.
- 2—What can be done with it.
- 3—How it is accomplished.
- 4—Its principal problems.
- 5—Why it has not been used heretofore.
- 6—Why it is now being used.

(1) WHAT IT IS:

220 K. V. transmission is the highest transmission voltage thus far proposed

for actual construction. The highest in use is the 160,000-volt transmission of the Southern California Edison Company extending from Big Creek to Los Angeles, a distance of 242 miles. The highest voltage transmission on which construction work has heretofore been done is the 165 K. V. line of the Great Western Power Company extending from Caribou to Valona, California, a distance of 185 miles.

The Pacific Gas & Electric Company is the first to actually construct any transmission line intended for 220 K. V. operation; 220 K. V. lines have been considered for several other projects, but the construction of none has thus far been started.

(2) WHAT CAN BE DONE WITH IT:

With 220 K. V. a maximum of 140,000 kilowatts may be transmitted 200 miles with a loss of not over 8 per cent. A nor-

mal load for a 220 K. V. circuit may be considered to be about 120,000 kilowatts, and at this load the loss need not exceed $3\frac{1}{2}$ per cent for each 100 miles of transmission distance. The capacity of one 220 K. V. circuit is four times the capacity of one 110 K. V. circuit. The losses and cost of the 220 K. V. circuit are about one-half the losses and cost of 110 K. V. circuits having the same total capacity. The capacity of a 220 K. V. circuit is about twice the capacity of a 165 K. V. circuit. The losses and cost would be less. The distance to which energy may be transmitted at 220 K. V. is not limited to any given number of miles but depends on the economic question of how much may be expended upon the transmission of energy to a given market.

If the permissible cost of transmission were high enough there seems no reason to believe that energy might not be transmitted at 220 K. V. for distances of 400 miles and upward.

(3) HOW IT IS ACCOMPLISHED:

It might be expected that the devices capable of such great accomplishment would be quite unlike the devices we employ for the lower voltages, but such is not the case; 220 K. V. is obtained from transformers having a construction very similar to those used on the lower voltages with the exception that they are somewhat larger and better insulated.

Two hundred and twenty K. V. is controlled by oil circuit breakers precisely similar in appearance to those used on lower voltages. They are of course considerably larger and more expensive.

Two hundred and twenty K. V. will be transmitted over steel tower transmission lines which at a distance will closely resemble the steel tower lines employed for 110 K. V. transmission. The towers will be larger; the conductors will be larger and more widely spaced. The insulators will be longer.

Two hundred and twenty K. V. is accomplished not by a radical departure from present established practices for lower voltages, but by an extension of these practices.

(4) ITS PRINCIPAL PROBLEMS:

The principal technical problems encountered in designing 220 K. V. transmission relate to corona discharge from the conductors into the air; the design of line insulators and the voltage regulation of the transmission.

The problem of corona arises from the fact that if a high voltage is impressed upon a very small conductor there will be a discharge of electricity into the air surrounding the conductor with a loss of energy. This discharge is called corona and has the appearance of very small flames shooting out of the wire into the surrounding air. Corona may be avoided for any given voltage if the size of the conductor is made sufficiently large. For 220 K. V. the conductor size required is eight-tenths of an inch in diameter or larger.

Some of the problems relating to corona and to the line insulators can perhaps be better understood if a comparison is drawn between an electric transmission system and a hydraulic transmission system where the energy is conveyed by means of water under exceedingly high pressure. For example, the water arrives at our Pit No. 1 Power House in two pipes 8 feet in diameter under a 190-pound pressure. If the apparatus in the power house transformed this water into high pressure water and pumped it into three pipes each nine-tenths of an inch in diameter the pressure would be about 1,500,000 pounds per square inch. To support this pressure would require pipes of steel having an outside diameter of about 8 feet. This diameter is assumed on the basis that the stress within the walls of the pipe could be made uniform from the center to the surface. As a matter of

fact a pipe of this thickness and subject to this pressure made of one piece of steel would have very much more stress near the center than it would near the surface.

When electricity is transformed to a high voltage such as 220 K. V. and this voltage is impressed on the line conductors, electrical stresses are set up in the surrounding air somewhat similar to the mechanical stresses set up in the walls of the steel pipe. Corona may be likened unto a cracking of the walls of the tube of the pipe outwardly from the center due to the excessive stresses set up in the material at this point. The line insulators which must be used to support the conductors are subject to the voltage impressed on the line. The electrical stresses which the insulators must resist can be better appreciated by returning to our pipe for a moment. Imagine holes bored into the center of the pipe and then plugged. The plugs must resist the enormous pressure which tends to blow them out. The insulator is like an electrical plug in an electrical hole in the air. The electrical stresses do not tend to force the insulator away from the conductor but there is a strong tendency for a leakage of electricity through the insulator and along the surface of the insulator. The insulators must withstand these stresses under all conditions of weather, whether it be fair or stormy. They must not permit an excessive leakage of electricity over their surface when the surfaces of the insulators have become covered with dust and dampened with fog or light rains.

The insulators must also contend with the tendency to concentrate excessive voltage stresses on the portion of the insulator next to the conductors even as the walls of our pipe have to contend with the tendency for excessive stresses to be set up near the hole through the pipe.

The selection of suitable insulators for 220 K. V. transmission has been made the subject of a very thorough investigation and has not yet been entirely completed. It is believed that this investigation will result in better insulators than have heretofore been available.

The control of the voltage of a 200-mile 220 K. V. transmission presents a difficult problem. In the first place, a very large generating unit is required to bring the line up to voltage. In the case of the Pit transmission the 35,000 KV-A generators which are being installed in our Pit No. 1 power plant are about the smallest generating units that should be used with a transmission of this voltage and length.

A 220 K. V. circuit could not carry 120,000 kilowatts without an excessive variation in voltage between the generating and receiving end unless the voltage at the receiving end is controlled by synchronous condensers. A synchronous condenser functions in regard to a transmission line very much as a bearing functions on a shaft. The shaft transmits energy through means of the turning forces applied, but it must be supported at intervals by bearings or else it will bend to such an extent that its ability to transmit power will be greatly reduced. The synchronous condenser supports the voltage of the line and permits the line to devote its attention to the transmission of energy. By so doing the cost of transmission is reduced because the increased capacity gained in the line more than offsets the additional cost of the synchronous condenser. It has been estimated that the cost of the Pit transmission with synchronous condensers is approximately three-fourths of the cost that would have been incurred if they had not been used.

(5) WHY IT HAS NOT BEEN DONE BEFORE:

Two hundred and twenty K. V. trans-

mission has not heretofore been used because the amounts of power which it has been desired to convey over one circuit have not been sufficient to justify the expense. As has been stated heretofore, the capacity of a 220 K. V. circuit is from 120,000 to 140,000 kilowatts and when loaded to this extent the cost per K. W. mile is less than if a lower voltage were employed. However, the total cost in dollars per mile for a 220 K. V. transmission is about double the total cost per mile for a 110 K. V. transmission. The amounts of energy which we have heretofore been required to transmit have not been so great as to require the 220 K. V. transmission. Furthermore, we

have not had the opportunities to install the very large generating units which are required in connection with the 220 K. V. lines.

(6) WHY IT IS NOW BEING USED:

The Pacific Gas & Electric Company has acquired rights on the Pit River in Northern California which will enable it to develop over 350,000 K. W. The plants will be about 250 miles from the bay region in which the Company has to supply more than one-half of its total load. The amount of energy to be ultimately transmitted, together with the distance, have made 220 K. V. the most economical solution of the transmission problem for the Pit River power.

Copper the Best Known Conductor

By E. H. STEELE
Engineer Line Construction

Copper—What is it? Where does it come from and what is it used for?

Answering the first question, copper is a reddish, ductile, metallic element having an atomic weight of 63.57, a specific gravity of 8.9 and a fusing or melting point of 1,083 degrees Centigrade.

It is found in many parts of the world both in its native state and in many ores. It is one of the oldest known metals, having first been discovered in prehistoric days and from the date of its first discovery has been made use of in widely diversified ways.

In the United States, particularly in Michigan, it is found in great quantities as a free element. It is also found in liberal deposits in the States of California, Arizona, Utah and Montana, but in these States it is in ore deposits.

Because of its ductility and due to modern methods of ore mining, it has been found more economical to secure

copper through a reduction of the ore deposits than to mine it where found as a pure metal, though there are large mines working in both classes of deposits. Ancient and prehistoric miners confined themselves almost exclusively to native deposits.

Copper has been one of the great mediums of civilization and is still growing in importance as a factor in our present civilization. In ancient or prehistoric times pure copper was almost exclusively used in the making of utensils, ornaments and weapons of war. At the present time it is used as an alloy with a great many other metals, giving it a wide field of usefulness.

The one big field, however, where pure copper is used is in the electrical industry, for it is used in almost everything you touch electrically. From the big generators and transformers at the power houses to the transmission lines, secondary lighting circuits and even the small motor on



General view of the Reduction Plant of the Anaconda Copper Mining Company at Great Falls, Montana.

your sewing machine, copper is a necessary factor.

For the transmission of electric energy, copper is the best known conductor, and it is from the great lines of copper reaching out from the generating plants to the substation and from the substation through the network of distribution lines to your home, to the factory and all other places where electric energy is used that makes it possible for our present day civilization to enjoy the benefits of the latent power represented by our mountain streams in the high Sierras. As far as science has yet gone, the electrical development of today would have been impossible had it not been for copper.

You will readily see the importance of this metal in our great Pit River development now under construction and the enormous quantities necessary to be used for transmitting the power from north-eastern Shasta County, a distance of nearly 300 miles, to the main centers of distribution near Oakland and San Francisco. Shasta County, the scene of our Pit River power development, is also the greatest copper-producing county in the State, and seeing that California ranks as an important copper producer, I have often heard the question asked why we

did not patronize home industry in placing our big copper order for this development.

It may, therefore, be well to point out at this time the reasons why we could not purchase California copper. The copper in this State is found in ores only, and the big smelters which have been built here are only capable of separating the ore from the metals that are held in the ore. The product secured is what is known as copper matte, which while containing a predominating percentage of copper also contains much foreign material, a small percentage of which is very often zinc, silver and gold. There being no refineries in this State for separating these various metals, it has always been necessary to ship the matte to refineries located on the Atlantic seaboard, principally in the States of New Jersey and New York, making it necessary to transport it twice across the continent. Quite recently, however, the Anaconda Copper Company has established its refineries and finishing mills at Black Eagle, Montana, which is in close proximity to its mines, so that when the Pacific Gas & Electric Company was ready to place a copper contract which was the largest single order ever placed in the history of the country, it

found the Anaconda Company in a very advantageous position to fill such a contract. It is the most western copper refining, wire drawing and stranding mill combined in the United States.

For the Pit River transmission development only, the Pacific Gas & Electric Company placed with the Anaconda Copper Company two orders—one, during the year 1920 for 1,000,000 pounds and a second order in the year 1921 for 10,000,000 pounds, making a total of 11,000,000 pounds of copper strand which will be sufficient to supply two circuits of high tension transmission line from the Pit River region to San Francisco bay. Nine million pounds of this copper was made up in one size and kind of conductor which is known as 500,000 C. M. rope strand. This cable measures approximately nine-tenths of an inch in diameter and is made up of seven copper wires stranded together and, in turn, seven of these strands again stranded, making a total of 49 strands, forming the rope lay. One million two hundred thou-

sand pounds of this order was made up in 250,000 C. M. standard strand and the balance of 800,000 pounds in 4/0 and 3/0 B. & S. gauge 7 strand.

It is hard to realize the magnitude of this order by simply furnishing the weight figures, but when I tell you that ten months of constant operation were required to draw and strand this order, and that 220 freight cars carrying 50,000 pounds each were used to transport it from Montana to California, that the transmission line from the Pit to the bay without any power house or substations connected represents an investment of \$9,000,000 and that the value of this copper laid down at the railroad station before it was put on the line represents 25 per cent of the entire cost of the line, you may have some idea of the magnitude of the order.

The great opportunities that will be at hand to Californians because of this great line of copper that is being stretched clear across the north-central portion of the State will be told in another article.



Transmission line from the Pit region looking toward the Sacramento valley.

How Copper Wire Is Made

By R. KENNARD

Electrical Superintendent Anaconda Copper Mining Co., Great Falls, Montana
(Reprinted by permission from the Electrical Journal)

Refined copper, in its commercial form, is cast into bars which are usually about 4 inches square, 50 inches long and weigh 220 pounds.

The wire bars are first placed on a table in the rear of a bar-heating furnace, and a pusher, operated by compressed air, moves them along into the furnace, which holds 100 bars lying side by side throughout its length. The furnace is heated by fuel oil burners located at the opposite end from that at which the bars enter. The bars are taken out of the furnace through a door, located near the heating chamber. As fast as they are taken out, more bars are pushed in at the rear end and the bars already in the furnace are moved toward the heated end and the discharge door. The heat travels the length of the furnace, the smoke and gases going out through a flue at the rear end.

The bars are taken out of the furnace at the rate of 100 an hour. Thus it takes an hour for a given bar to travel through the furnace. In this way the heating takes place gradually and can be controlled so as to have each bar at the proper rolling temperature when it reaches the discharge door. The bars are taken out at the discharge door by a pair of tongs suspended from a trolley which runs in line with the first groove in the rough rolling mill. This mill consists of three rolls 18 inches in diameter and 64 inches long, one above the other, driven from a motor through a reducing gear unit and a set of pinions. The direction of rotation of these rolls is such that the bar, after entering the first groove, which is in the top and middle rolls, passes through this groove and drops down into

position for entering the second groove, which is in the middle and bottom roll, and passes back through this second groove to the side of the mill from which it started. It is then raised into position for entering the third groove, which is next to the first groove. In this way, it passes back and forth through the mill seven times, each pass reducing the cross-section of the bar and increasing its length.

After leaving the roughing mill, the bar passes to the intermediate and finishing mills, consisting of five and six pairs of rolls respectively, each alternate pair rotating in opposite directions. When the rod, as it comes from the roughing mill, passes through the first pair of rolls in the intermediate mill, a man catches the end of it with a pair of tongs and starts it back through the next pair of rolls, the rod running in a loop on an inclined iron floor, which is on both sides of the rolls. This process is repeated until the rod has run through all the different pairs of rolls.

The wire-drawing process consists of drawing the rod through a succession of dies until its diameter has been reduced to the diameter of the wire required. For the larger sizes of wire the rod is drawn through one die at a time until it is finished, but for smaller wires the rod is placed on a continuous wire-drawing machine and is drawn through a succession of dies at the same time. These machines have a series of drawing rolls, each of which draws the wire through one die, after which it passes through the next smaller die and on to the next drawing roll, this being repeated until it passes through the finishing die. It is then

either drawn into a coil on a revolving block, or drawn and wound on a reel which is so driven as to take the wire as it is drawn through the last die. The drawing rolls and blocks on these machines run at increasing speeds proportioned so as to take care of the increasing length of wire produced by the elongation due to drawing.

The process of drawing the rod through the dies to the finished size hardens the copper. Wire drawn on these machines is shipped as "hard drawn wire." When "soft drawn wire" is required the hard wire is passed through an annealing furnace which renders the wire soft and pliable. Medium hard wire is produced by drawing the rod to a certain size which after being annealed will require just the necessary amount of further drawing to produce the degree of hardness specified. The dies used for wire drawing are small circular dies made of chilled cast iron, cast with a tapered hole and are reamed to exact size by hand. After the hole in the die wears and becomes too large for a given size of wire it is then reamed out to a larger size, this process being repeated many times.

The usual variation in diameter allowed on all wires of sizes No. 10 and smaller is one one-thousandth of an inch. Not only accuracy as to size is required, but it is necessary to shape the die so that it will hold its size within this limit after withstanding the wear of drawing a wire as long as four miles from one rod.

In the manufacture of strand or cables the wire composing the strand or cable may be hard, medium hard or soft. The wire is either drawn on iron reels or wound on reels from coils and these reels

are placed in the stranding machines. Strand such as is used for power transmission lines is made on a high speed machine which will lay up six wires around a center wire.

Another machine consists of two revolving circular frames which usually revolve in opposite directions, and in which iron reels containing the wire are placed. The first frame holds six reels, and as this frame revolves, the six wires are laid around a center wire which passes through the center of the frame. These seven wires then form the core of the cable and pass through the center of the next frame. The twelve wires which this second frame holds are laid around this core of seven wires, making a 19-wire strand or cable.

Another machine of the same type but with three frames holding 6, 12 and 18 reels each, makes a cable of three layers or a total of 37 wires. If required, the cable of 37 wires is passed through the center of another machine and a further layer of 24 wires is added, making a 61-strand cable. It is also possible to pass this through another machine, adding 30 wires, if a cable of 91 wires is desired.

The completed cable passes around a revolving drum which takes it up as fast as it is twisted. It then passes from the drum to the reel on which it is to be shipped, which is driven so as to take it from the drum at the proper speed.

The revolving frames are driven through reversing and interchangeable gears, as is the take-up drum. The relation of the speed of the frame to the speed of the drum determines the pitch or lay of the wires in each layer, this lay usually varying with the number of wires.

The San Jose-Los Gatos High Pressure Gas Transmission Line

By R. S. FULLER

Engineer of Distribution, Department of Gas Construction and Operation

On November 1, 1921, the City of Los Gatos received its gas supply direct from the San Jose Gas Works when the high pressure transmission line connecting the two cities was put into operation. This line will supply in future all gas for Los Gatos and will make possible the razing of the plant there, a brief history of which is taken verbatim from a letter very kindly contributed by Mr. J. D. Farwell, former secretary of the Los Gatos Ice, Gas and Electric Company:

"The installation of an improvement in a community, whether it be a gas works, ice plant or other industry, is often the result of someone who during a certain period has interested some of the prominent citizens to invest their money in an enterprise that is needed and which will benefit their town. Such was the case with the Los Gatos Gas Company. After successfully establishing the company here, the promoter installed gas works at Livermore and at Watsonville during the same year, 1885.

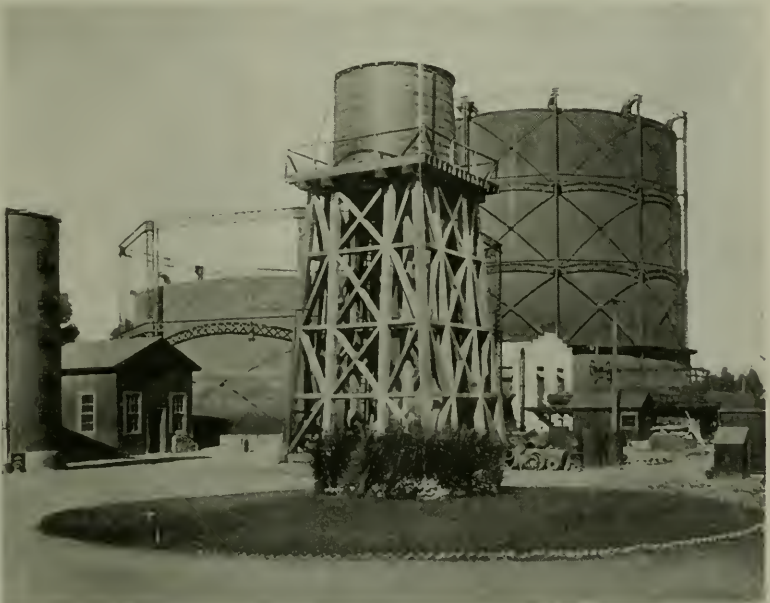
"The Los Gatos Gas Company was incorporated April 8, 1885, for \$50,000 with John W. Lyndon president and George W. Lynch secretary. Gas was made from coal and sold for \$5.00 per M. One bench of three retorts and an 8,000 cubic foot holder were installed.

"One of the events in the history of Los Gatos was the celebration that followed

the turning on of the gas. People living in the Santa Cruz mountains as far as Wrights drove to Los Gatos to take part. It was an all day affair. When the street lamps were lighted that evening the band played and great joy was expressed by all those present.

"A few years later the system was leased to Walter Griswold, who lighted the street lamps, made gas a good part of the night, turned off the lamps the next morning, read meters, installed services and collected bills during the day besides many other duties.

"During the year 1902 the Los Gatos Ice, Gas and Electric Company purchased the gas interests here and replaced the old coal retorts with an oil system installed by the Western Gas Construction Company. The president of the company was G. W. Hume of San Francisco and J. D. Farwell was secretary. In 1913 this company sold all its property, consisting of both gas and



San Jose Gas Works, whence emanates the high pressure transmission line to Los Gatos.



Operating floor of the San Jose Gas Works, with its modern generating machinery.

electric systems, water power and ice factory to the Pacific Gas & Electric Company."

It will be seen from Mr. Farwell's letter that while the gas system in Los Gatos was but a small one compared to some of the other units of "Pacific Service" it was not without its interesting history.

The construction of the transmission line, the length of which is $10\frac{3}{4}$ miles, was commenced July 25 and completed October 12, 1921. Work on the three regulator pits was completed October 25, but as the Railroad Commission's Joint Committee on Efficiency and Economy of Gas, which was making tests at San Jose, desired to keep their records for the month of October free from complications which would ensue were some of the gas manufactured in San Jose sent to Los Gatos, the line was not put into service throughout its entire length until November 1st.

The line as it leaves the San Jose Gas Works is of $6\frac{5}{8}$ -inch outside diameter wrought-iron pipe, with oxyacetylene welded joints, this size continuing for a distance of 7,800 feet to the intersection of Meridian and Stevens Creek Roads, where a regulator pit is installed and the gas fed through a regulator to improve the

pressure in the southwest portion of the San Jose distribution system. From this pit to a point opposite the town of Campbell, a distance of approximately $3\frac{1}{2}$ miles, the line is of $4\frac{1}{2}$ -inch outside diameter pipe with welded joints similar to the $6\frac{5}{8}$ -inch line. From this point on to Los Gatos the line is of $4\frac{1}{4}$ -inch outside diameter pipe with type of construction identical with that of the other

two sizes. At the end of the line in Los Gatos the town is fed through a 4-inch district regulator which delivers the gas through a cast-iron low pressure line in Main Street.

At the time of the approval of the estimate for the job the fruit season was imminent, which usually means a scarcity of labor, and there was no mechanical equipment at hand with which to do the work. Therefore the Gas Department, which was to carry on the construction, called for bids from various contractors on digging and back filling the trench. Several bids were received, but as all of the figures submitted were so much in excess of the costs as estimated by the department's engineers, all proposals were rejected.



Trenching machine used on the transmission line.

Approval for the purchase of a trenching machine was obtained from the management and immediate delivery was fortunately secured, there being a machine of the proper type in San Francisco. Its performance on the job has in every way justified its purchase, for at the completion of the work it was found that the figures used in estimating had been cut 60 per cent and instead of the trenching costing 21 cents per foot it actually cost less than eight and one-half cents. The figures submitted by the contractors had been still further reduced, as they had been higher than those in the estimate. Still further savings were effected due to the fact that the machine excavated portions of the line presenting obstacles of such a nature that it seemed necessary to do the work by pick and shovel. On one of these portions the telephone poles were so close to the concrete highway that the digging machine could not excavate on the line as prescribed by the State Highway Commission and clear the poles. This difficulty was overcome by digging on the line until encountering a pole, backing away, then moving forward, passing the pole, backing into position again and commencing digging once more, leaving a section to be excavated by hand work. At another place a slight cut had been made when the new highway was built, leaving a bank very close to the location of the ditch which ordinarily would tilt the machine to such an angle as to render its operation impossible. Here timbers were used under the rear wheels or caterpillars of the trenching machine to keep it in a nearly level position.

Another complication was the presence of two large riveted steel water mains which were for the most part in the exact location



Rocky soil excavated by trenching machine.

trenching machine were to come into contact with these water pipes serious damage would be done before the machine could be stopped. In order to obviate all possible danger, men were sent ahead to uncover the water mains every hundred feet or so that their exact location would be known. With the location at these points as guides the trenching machine operated without touching the water pipes at any point.

For a considerable distance the material excavated consisted for a great part of rocks, varying in size from that of a baseball up to that of a football, with a few of even larger size. Contractors who had done work in the locality where the rocks were encountered had freely predicted before the machine reached there that it could not excavate through the rocky ground. While it was necessary to renew the digging buckets and teeth as well as the driving pinions rather often, the machine dug through the hardest soil, if soil it could be called, and exceeded our highest expectations.

Our success in excavating a comparatively shallow trench, for one of a depth of three feet is not deep, in such difficult ground was due to the fact that the machine used was of the "wheel" type and not of the "ladder" type, the latter being better adapted to the excavating of deep trenches. In the "wheel" type the digging buckets are all riveted or bolted to a wheel which insures rigidity. In the "ladder" type the buckets are carried on two parallel



A sycamore tree that had to be avoided.



The old gas works at Los Gatos, dating from 1885.

chains over a boom which undergoes considerable vibration when working in hard or rocky soil at shallow depths.

To protect the line against corrosion, it was painted, first with a bituminous priming coat, applied cold and then with a hot coat of heavy bitumen or asphalt, which with the primer made a very close bond to the steel.

Testing the line for leaks was carefully carried on during the entire job, tests of sections being made by pumping them full of air to a pressure of 60 to 80 pounds per square inch, painting the joints with soap and water and observing the pressure on a recording gauge. After the entire line was completed a test at 60 pounds was made and the gauge showed no drop in 24 hours.

This line will, as soon as services have been installed, serve approximately 100 consumers en route, who live on property abutting the roads in which the line is laid. At the present time a crew is at work laying gas mains and services in the town of Campbell to supply approximately 150 consumers from the new line.

The compressor equipment at the San Jose Gas Works consists of two steam driven single stage units, one

with a delivery of 110,000 cubic feet per hour and the other of 75,000 cubic feet capacity. These compressors are also used to compress gas for the system fed from the 8-inch high pressure line from the gas works to Seventeenth and Santa Clara Streets, serving as a feeder to increase the pressure in East San Jose. This 8-inch line was laid in the spring of 1920 and feeds the low pressure system through regulators, one at Eighth and St. John Streets and the other at Seventeenth Street and Santa Clara Avenue.

The benefit derived in improvement to service in the city of San Jose itself through boosting the pressure in the southwest part of the city from the Los Gatos line is very marked, results having been obtained which would have entailed considerable expenditure had the transmission line not been built. During the winter of 1920-21 many consumers on the outskirts of the system near the ends of the distribution mains were unable to get sufficient gas pressure over the peak hours. The distance from the gas works to these localities was so great that low pressure feeders of adequate capacity for insuring service under natural increase of business would have been prohibitive in cost. Under the present conditions the consumers are receiving service equal to that prevailing in the immediate vicinity of the plant.



Bird's-eye view of Los Gatos, a picturesque corner of the Santa Clara Valley.

Advertising "Pacific Service" —the 1922 Campaign

"Advertise—to make known by a public notice; especially by printed statements; publish abroad; commend to the public."—*Standard Dictionary*.

"Pacific Service," its service, its facilities, its aims, purposes, the merits of its two principal commodities, gas and electricity, are this year being made known by "public notice;" are being "published abroad;" are being "commended to the public" in a manner stronger and more vigorous than ever.

Advertising for 1922 is now well under way. During the early part of February the first advertisements began making their appearance in newspapers and periodicals all over the territory. Advertisements will continue to appear regularly throughout the year.

In determining upon the character of the advertising for 1922, it was thought wise to first review the entire situation, make an analysis of the sales problems involved, and undertake a careful study of conditions all over the territory. The months of January and February were given over largely to such a study and analysis.

However, it was deemed advisable to have advertising of some nature appearing regularly during the period of two months required for the preparation of the year's campaign. With this in view, advertisements of a general institutional character were prepared and are now appearing in newspapers and periodicals, as has just been stated. These will continue to run during March. April 1st will see the appearance of advertising which is based on results of the study and investigation work carried on during the first two months of the year.

It will be interesting to touch briefly on the character of some of the advertising now running. One of these is headed, "The Mightiest Servant in California." This is illustrated by a large map of Northern California bearing an imprint of the "Pacific Service." The text of the advertisement compares P. G. & E. service to that of the faithful, tireless, energetic servant. It impresses the reader with the size and responsibilities of P. G. & E., and the number of customers

served. Another advertisement is headed, "Colonel Good and Neighbors Own This Big Company." This advertisement might be called an answer to the question, "Who Owns the P. G. & E.?" The text of the copy shows that real flesh and blood people, such as we meet every day and have respect for, own the stock and securities of the P. G. & E. The idea of public partnership is the keynote of this advertisement. Still another advertisement is headed, "Old Schoolmates and Friends Operate the P. G. & E." This advertisement still further humanizes the public utility corporation, particularly "Pacific Service."

Another series of advertisements presents vividly the problems our Company is faced with in keeping power lines open and in operation. One advertisement is headed, "Hugging an Icicle to Repair Your Power Line." This advertisement and others tell of the work and hardship encountered by "Pacific Service" men in keeping poles in place and wires strung and the water flowing into the power houses for the purpose of keeping P. G. & E. service continuous and uninterrupted.

Other advertisements are along the lines of teaching our customers how to read meters, why gas and electric bills are apt to be higher during some months than during others. In some of the smaller papers there are appearing advertisements tending to increase the use of gas and electricity and to foster good will for the Company.

The advertisements described vary in size from 4 columns 15 inches down to 2 columns 6 inches. Accompanying this are shown in reduced size specimens of the advertisements just discussed.

By means of a continuous, constant and constructive advertising campaign, the company aims to not only increase the use of its products and the number of its customers, but also aims to foster and keep alive the good will and esteem of the people of the State.

In answer to
the question,
What is the
P. G. and E?



The Mightiest Servant in California

PICTURE in your mind a strong, tireless servant—one ever alert—one that constantly serves, day and night, over 1,700,000 people.

Think of a servant so domesticated that it warms, lights, and makes comfortable the homes of thousands; so powerfully powerful that it whirls the mass of automobiles and hauls trains at breakneck speed.

The Pacific Gas and Electric Company's servant. It serves, with equal fidelity, the farmer and the city dweller. Its service lightens the burden of household chores, enables the farmer to take advantage of labor-saving devices. Industries rely upon it for power.

The huge arms of this servant embrace the entire state of California, as that covered by seven Eastern states. It is a prosperous section in the West, and its allegiance is to the Pacific Gas and Electric Company.

Service is the only thing this Company's servant does so great—important—necessary in case of fire, disaster, and even loss of life would not be constantly maintained.

Such service does not savor of servitude. It is the highest ability and the most steadfast loyalty of man.

PACIFIC GAS AND ELECTRIC COMPANY

P.G. and E.

"PACIFIC SERVICE"

Considering the universal adoption of the meter by all classes of public service, it is surprising how few consumers are really informed upon the working of this device for acquainting both producer and consumer with the extent of the service supplied.

Note the "Pacific Service" shadow in this "ad," covering a large slice of the state of California covered by one company's operations.



Our Experts read Meters as readily as you tell time

"PRACTICE MAKES PERFECT" is an old saying that is well demonstrated by the quickness and accuracy of P. G. and E. meter readers.

Meter readers moving quickly along from house to house read hundreds of meters a day. With so much practice, is it any wonder that their eyes note instantly the exact positions of the pointers on the three circles? The meter dials are more familiar to them than your watch face is to you.

Speed and accuracy in meter reading are matters of practice. It only takes a few minutes to learn how it is done; so next week, in our advertisement, we will tell you how. Then, you can easily check your bill each month.

The Pacific Gas and Electric Company is glad to have its customers read their own meters; for, in that way, they will get a better understanding and a new appreciation of Pacific Service.

PACIFIC GAS AND ELECTRIC COMPANY

P.G. and E.

"PACIFIC SERVICE"

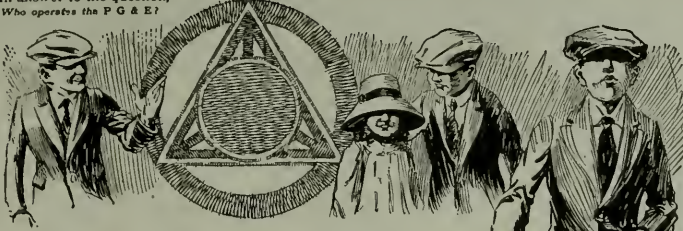


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Advertising "Pacific Service." Specimens of advertisements that have appeared, so far, in the daily news-

In these days of open discussion of public utilities and their methods it is well to realize how much of a "home" industry really is "Pacific Service."

In answer to the question,
Who operates the P. G. & E.?



Old Schoolmates and Friends operate the P. G. and E.

Do you remember Billy Dash, that big, freckled-faced boy who was such a good ball player during the old school days? Well, Bill is now one of the officials of the Pacific Gas and Electric Company. He's just as good an official as he was a ball

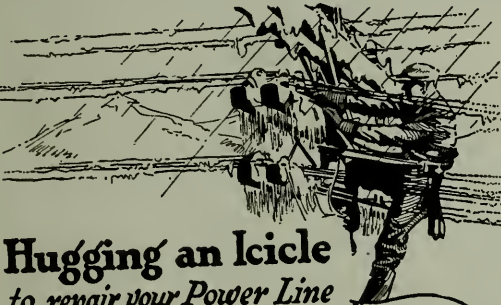
What the P. G. & E. Pays its Workers

Over 8,000 men and women are employed by this Company.

The monthly payroll is over one million dollars.

This money is spent in California for the necessities and luxuries of life.

Everyone, merchant, school teacher, doctor, lawyer, farmer, benefits indirectly by this disbursement of over 12 millions annually for wages.



Hugging an Icicle to repair your Power Line

WHEN THE MOUNTAINS are hidden behind a swirling blanket of snow, think of the P. G. and E. men who are toiling for you up there in the freezing cold.

During severe storms, wires break under the weight of accumulated ice and snow. Poles are blown over or go down under the weight of wires covered with ice. Ice forms on the poles as much as 12 inches thick, making them veritable icicles.

Climbing icicles is only one phase of the war between P. G. and E. men and the elements. Instance after instance can be cited to illustrate the disregard of personal convenience and obstacles that is characteristic of this Company and its personnel when service to customers is threatened.

Notwithstanding the obstacles which must be overcome in maintaining service, the rates have been steadily reduced during the past twenty-five years.

PACIFIC GAS AND ELECTRIC COMPANY

P. G. and E.

"PACIFIC SERVICE"

YOU can be of great service to the Company if you will report to the nearest convenient station or office the exact location of any damage to its property that you see in town, country or mountains.



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The public must be satisfied with service under any and all conditions. This "ad" tells something of the toil and hardship endured in supplying "Pacific Service" during stress of winter storms.

papers of our "Pacific Service" territory in the opening of our 1922 campaign of publicity and education.



JOHN F. CLEARY



JOHN TRANT



THOMAS CLASLY



GEO. H. SMEDLEY



D. J. LUCEY



D. B. RICKEY



MICHAEL NUGENT



A. DE PAULI



WM. SCHAEFFER

The "Pacific Service" pension roll. Here are nine former employees whose long and faithful service has entitled them to honorable retirement.

The "Pacific Service" Roll of Honor

Heading the honor roll of "Pacific Service" are 64 names of men whose long and faithful service to our company has been rewarded by their honorable retirement with provision for their declining years under our company's pension system, which underwent complete revision last fall.

In our last issue we presented the portraits of nine of the oldest, in terms of service, of our company's pensioners, accompanied by their several service records. In doing this we were actuated by a desire to make our readers acquainted with these men and their records, and to point out what is generally recognized in all up-to-date business enterprise, namely, that long and faithful service shall have its just reward.

Opposite this will be found the second installment of nine portraits of men whose names are upon our company's pension roll. These are:

John F. Cleary. 65 years of age, having been born April 27, 1856. Entered the service of the Pacific Gas Improvement Company, October, 1881. Retired on pension February 1, 1917, at which time he was foreman of gas distribution in San Francisco Division.

John Trant. 66 years of age, having been born July, 1855. Entered the service of the San Francisco Gas Light Company in August, 1883. At the time of retiring on pension, February 1, 1921, he was gate-man at the Potrero plant.

Thomas Clasby. 63 years of age, having been born January 8, 1859. Entered the service of the California Electric Company in January, 1885. At the time of retiring on a pension, March 1, 1918, was in the service department of the San Francisco Division.

Geo. H. Smedley. 72 years of age, having been born April 23, 1849. Entered the service of the Pacific Gas Improvement Company in 1885. At the time of retiring on pension, April 1, 1917, was in the gas distribution department of the San Francisco Division.

D. J. Lucey. 61 years of age, having been born April 29, 1860. Entered the service of the San Francisco Gas Light

Company in September, 1886, and at the time of retiring on a pension, January 1, 1919, was superintendent at the Potrero.

D. B. Rickey. 89 years of age, having been born on September 3, 1832. Entered the service of the Oakland Gas, Light & Heat Co., September, 1887. At the time of retiring on a pension, June 1, 1916, was in the meter repair department, East Bay Division.

Michael Nugent. 63 years of age, having been born on August 12, 1858. Entered the service of the San Francisco Gas Light Company in 1888, retiring on a pension September 1, 1916, at which time was employed in the gas distribution department, San Francisco Division.

A. De Pauli. 60 years of age, having been born on September 27, 1861. Entered the service of the Capitol Gas Company, Sacramento, in 1888 and at the time of retiring on a pension, July 15, 1916, was in the meter repair shop, San Francisco Division.

Wm. Schaffer. 63 years of age, having been born on March 16, 1858. Entered the service of the Edison Light and Power Company in 1890. At the time of retiring on a pension, April 1, 1921, was a lineman in the San Francisco Division.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION



Homeward bound from Truckee. The party photographed at American. Manager G. R. Milford of Shasta Division prominent in foreground.

The Drum-Sacramento Snow Party.

In a driving rainstorm the P. S. E. A. special pulled out of Sacramento on the afternoon of February 25th. Nine Pullmans carried "Pacific Service" employees with their friends and families who had gathered from every corner of our Company's territory for the big event. Every section sent its little group, and even before the train started everybody knew everybody else and the crowd had been assimilated into one big family.

It was shortly after 2 o'clock in the afternoon when the long train left the shed and began its journey across the valley toward the slopes of the Sierras. Reinforcements were taken on at various points en route, Auburn, Colfax and Alta, each adding its quota, until the gathering numbered nigh two hundred souls. The first snow was encountered just above Gold Run, little patches here and there under the trees merging into a vast expanse of white that extended in every direction as far as the eye could reach.

Darkness fell just as the special entered the first snow shed. About the same time the first call for dinner was announced, and all proceeded to obey the call. The intervening time during the rest of the journey was more or less patiently spent and the train finally rolled into the Truckee station at a little after 9 o'clock.

Then the fun began. On the hillside across the Truckee River there blazed up a great bonfire, while a line of torchlights illuminated the trail through the snow to the toboggan slide. After an exhilarating hour or so in the deep snow the party assembled for the evening's entertainment, a dance in Masonic Hall. Excellent music was rendered by the "Pacific Service" orchestra from Sacramento, and the dancing continued until the small hours of the morning. Several moving picture companies being in the locality, the dance was graced by the presence of a number of stars and their satellites, Tom Moore, Mitchell Lewis, Alice Lake and others participating in the festivities.

Shortly after 1 o'clock in the morning the curtain on the stage arose, disclosing a midnight supper spread out and served by the committee. Needless to say this was acceptable to all.

The night was spent in the Pullmans and when curtains were raised the next morning a strange world was disclosed, all except the immediate foreground being blotted out in a driving whirl of snow. The snowstorm lasted all day but did not in the least lessen the enjoyment of sleighing, skiing, bobsledding and tobogganing; the feature of the latter being the novelty of having the sled and its occupants drawn up the incline by a steam engine, thus removing from this greatest of winter sports all element of hard work.

All good times must come to an end, and it was a tired and happy crowd that entered the cars at 1 o'clock when the train started for home. The trip down the long western slope of the Sierras was pleasantly spent in various ways and the special arrived in Sacramento in plenty of



A masterpiece of snow sculpture, crowned by Jack Johnson's hat.

time to make connection with trains going out in all directions.

To Chairman George F. Smith of Sacramento section, Dan C. Stewart of Grass Valley and their entire staff of co-workers "Pacific Service" extends its heartiest congratulations on the efficient and business-like way in which the outing was handled. The entire program was carried through without a hitch and it was no small undertaking. Even the special snowstorm arrived with a vengeance. Mr. W. Rad Coover of Sacramento, acting as chairman of the transportation committee, handled the sale of tickets with the skill and dispatch of a general passenger agent.

All of us are looking forward to another trip into the snow region as the big event of next year. In fact our snow carnival is now a regularly established feature of our association's annual program of out-door entertainment.

H. S. F.



The Truckee River Bridge

Miss Helen Larsen and Miss Alma Tilly of the San Francisco Telephone Exchange enjoying the snowstorm.

San Francisco Section.

On Tuesday evening, February 28th, a splendid program was presented at Native Sons' Hall. The evening's entertainment was under the auspices of the educational committee, who chose for their subject the popular one of the automobile. Nearly four hundred members and their friends attended, filling the large hall almost to its capacity.

First on the program was shown a motion picture in which a car of popular make performed hair-raising stunts while



Waiting to be hoisted to the top of the toboggan slide.

piloted by two young girls across desert wastes to the "Devil's Punch Bowl."

Section Chairman C. E. Larrabee opened the meeting and after a few well chosen words introduced Mr. Henry Bostwick, manager of San Francisco Division, who awarded badges to over seventy employees as recognition of long and faithful service.

Following Mr. Bostwick's address Mr. Larry Miller of the Line Construction Department rendered two popular songs, accompanied by Mr. Jack Hamel at the piano. The piece de resistance of the evening was next presented in the form of a lecture on the construction and operation of the motor car by Mr. R. C. Douglass, general superintendent of the Howard Automobile Co. Mr. Douglass' talk was extremely interesting and instructive. A demonstration board and model chassis were used in simplifying the explanation of the intricate mechanisms involved.

Mr. Ed C. Wood, superintendent of the San Francisco garage, followed with a short but interesting talk on its operation and management, accompanied by slides showing the up-to-date home of our company's transportation fleet.

Mr. C. Z. Yost of the Educational Committee then closed the meeting with the announcement that a course on automobile operation and repair would shortly be distributed. This course will include a series of lectures to be conducted at the garage.

Dancing, with good music furnished by the Emanino Five, was then indulged in until midnight.

The Men's Basket Ball Team of the San Francisco section finished their schedule in the Industrial League by annexing fourth place, a good showing for their first season, all things considered.

This team is the holder of the Drum Trophy, emblematic of the championship of "Pacific Service" won by them last year.

The team is now seeking games with other sections to decide the holder of the trophy for this year.



Holders of the Drum Trophy

Left to right (standing), Eckenroth, guard; Sturgis, guard; Collins, guard; Duckel, center; Cummins, forward; Mulford (manager), guard; Robinson, forward. (Seated) Gerber, guard; Paul (captain), forward; Mayfield, guard.

The Financial Side of "Pacific Service"

The Company's Income Account for the year 1921, which is given below, reveals a continuation of the strong and steady growth which has always characterized this enterprise.

The gross revenue of \$37,509,706.79 was the largest in the Company's history, and represented an increase of \$2,523,915.48, or 7.2 per cent over 1920. Due to rate variations in both 1920 and 1921 it is impossible to make an exact statement in dollars and cents of the factors underlying this increase, but unquestionably the major portion was due to additional business, electric rates having decreased 9 per cent on April 10, 1921, and gas rates also having registered a decrease during the year as the result of a reduction in the price of fuel oil. A most satisfactory feature of the year's operations was the comparatively small increase of \$821,444.53, or 3.5 per cent in operating expense, of which \$706,785.64 represents the increase in taxes accrued during the year. Net income increased \$1,702,470.95, or 14.8 per cent. The very substantial addition of \$18,040,393 to the Company's investment in plants and properties during the year—a result of the heavy construction program in the Pit River Region and of substantial additions and extensions necessitated by the normal growth of business—is reflected in some degree in increased interest charges and preferred stock dividends; the net result of the year's operations being an increase of \$692,819.37 in the balance available for the payment of dividends on common stock.

CONSOLIDATED INCOME STATEMENT (Including operations of Mt. Shasta Power Corporation) TWELVE MONTHS ENDED DECEMBER 31ST

	1921	1920	INCREASE
Gross Earnings, including Miscellaneous Income.....	\$37,509,706.79	\$31,985,791.31	\$ 2,523,915.48
Maintenance.....	3,437,673.45	2,740,639.00	697,034.45
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	20,841,411.22	20,717,001.14	124,410.08
Total Expenses.....	\$24,279,084.67	\$23,457,640.11	\$ 821,444.53
Net Income.....	13,230,622.12	11,528,151.17	1,702,470.95
Net Interest Charges.....	4,797,781.89	4,511,250.93	286,530.96
Balance.....	\$ 8,432,840.23	\$ 7,016,900.24	\$ 1,415,939.99
Bond Discount and Expense.....	394,532.15	306,537.64	87,994.51
Balance.....	\$ 8,038,308.08	\$ 6,710,362.60	\$ 1,327,945.48
Reserve for Depreciation.....	3,069,077.72	2,788,302.01	280,775.71
Balance to Surplus.....	\$ 4,969,230.36	\$ 3,922,060.59	\$ 1,047,169.77
Dividends Accrued on Preferred Stock (6%).....	2,132,283.43	1,777,933.03	354,350.40
Balance.....	\$ 2,836,946.93	\$ 2,144,127.56	\$ 692,819.37
Dividends Accrued on Common Stock (5%).....	1,700,202.90	1,700,202.90	.....
Balance.....	\$ 1,136,744.03	\$ 443,924.66	\$ 692,819.37

While the manufacturing and agricultural demand for electric energy was somewhat less than in 1920, due to the temporary curtailment of activity in some branches of these industries during the year, this decreased demand was more than offset by that uninterrupted increase in sales of electricity and gas for commercial and domestic purposes which is really a reflection, in a magnified degree, of the increasing population and business of this section of the country. Sales of electric energy during the year aggregated 1,021,820,689 kilowatt hours, or a decrease of 1.9 per cent compared with 1920. Gas sales amounted to 11,483,551,000 cubic feet, an increase of 7.9 per cent over last year's figures, and twice the volume of sales for 1911. Recent statistics of the United States Geological Survey show the Company's hydro-electric output to have been the second largest of any utility in the entire country.

WHY DOES A PUBLIC UTILITY CONTINUALLY SELL ADDITIONAL SECURITIES?

*(Adapted from an article by Martin J. Insull, Vice-President of the
Middle West Utilities Company.)*

This is one of the questions that is most frequently asked in connection with public utility financing. The average man, unfamiliar with public utility operations, finds it difficult to comprehend the unceasing demand of gas and electric companies for new capital.

In every growing community utility corporations continually need new money to enlarge their plants, extend their lines, increase their facilities, or in general to expand their service. This is particularly true in a progressive State such as California, which is increasing in population, manufacturing and agricultural activity, and general commerce at a pace almost unprecedented in the history of the country. If the utilities of this State stood still, the advance of the State would be halted, since these corporations supply a service absolutely essential to the State's development. The constant flow of new capital into these utilities, essential to the enlargement of their facilities and expansion of their service, can only be secured from two sources—from earnings and from the sale of securities.

Public utilities are regulated corporations whose earnings are limited to a fair and reasonable return upon the value of their property used and useful for the public service. These earnings are required to pay interest on the capital already invested, and even in the case of the most prosperous utilities the margin remaining after the payment of interest and dividend charges is relatively very small. It is insignificant compared with the vast amount of new capital required to carry on the utility's business. The nature of the undertaking requires a large amount of fixed capital per dollar of business done. It is not a trading business in which you buy something and sell at a profit. It is a business of service. To provide that service, money must be tied up permanently in the property that makes the service possible. The Pacific Gas and Electric Company's hydro-electric plants, electric steam generating plants, gas works, water pumping stations, and street railway tracks are all created by tying up money permanently.

In a trading business it is expected that the capital invested will be turned over from three to eight times per year, depending upon the line of business in which it is employed. Assuming an average turn-over of five times per year, a trading business of \$500,000 per year can be carried on with a capital of \$100,000. In the utility

business the reverse is the case. The capital requirements are at least three, and sometimes as much as six times the amount of business done annually, dependent upon the utility in which the capital is employed. The hydro-electric business particularly requires a large capital investment—usually about \$5.00 of capital to produce \$1.00 of gross revenue. In the case of a utility of this character whose gross business increases \$1,000,000 per year, it is evident that at least \$5,000,000 of new capital must be invested to take care merely of this additional business, aside from providing in advance for the requirements of the future. The demands for service in the populous and rapidly progressing territory in which this Company operates require the constant investment of additional capital in the enterprise at the rate of from \$5,000,000 to \$25,000,000 per year. It is, therefore, entirely obvious that a utility of this character cannot finance more than a small proportion of its very large capital expenditures out of earnings, but must secure from the sale of securities the great bulk of the new money required in its business.

In conclusion, it may be stated that it is clearly to the public interest to allow the utilities to earn a fair and reasonable return upon the money invested in their properties. Their function is to give the best service possible, and all the service required. For this they should receive rates which will pay all operating charges, and show such a rate of return upon the capital invested as will establish for them a high credit in the investment market and assure them of a supply of money at satisfactory rates. No utility can have a good credit standing unless it can show good earnings, and no utility without a good credit standing can secure, at reasonable rates, the additional capital so essential to enable it to meet the public demand for service. If the utility has to pay an unduly high rate for capital on account of its lack of credit, the public interest suffers in two ways:

(a) The expansion of service so necessary to the continued development of a community is inadequate.

(b) The higher cost of obtaining new money must ultimately be reflected in higher rates.

The utilities are the partners of the public. In the final analysis the partnership cannot be successful unless there is fair and liberal treatment on both sides.

Every thinking man who has the interest of the development of the country at heart should give a very marked share of his thought to the relation between the public and the utilities, to the end that this relation may be improved and strengthened until they are working together for their mutual development and success.

PROXIES FOR ANNUAL MEETING.

The regular annual meeting of stockholders will be held on Tuesday, April 11th, 1922, and stockholders are requested to sign and return at as early a date as possible the proxies which were recently mailed to them. At this meeting are elected the members of the Board of Directors to serve for the ensuing year, the Board in turn designating the Executive Officers of the Company to carry on its business. It is only by the vote of a majority of stockholders that the Board of Directors can be elected, and for this reason it is desirable that each stockholder should send in his proxy so that the affairs of the Company can be properly conducted.

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF THE
PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - - EDITOR-IN-CHIEF
FREDERICK S. MYRTLE - - - MANAGING EDITOR
A. F. HOCKENBEAMER - - - BUSINESS MANAGER

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*The Pacific Gas and Electric Company desires
to serve its patrons in the best possible manner.
Any consumer not satisfied with his service
will confer a favor upon the management by
taking the matter up with the district office.*

VOL. XIII MARCH, 1922 No. 10

EDITORIAL

In the present day, when the question of government vs. private ownership of public utilities is a topic of general discussion, not only upon the political rostrum but, also, in civic organizations and other places where men of affairs do congregate, the government-owned utility upon which the searchlight of public investigation has been most persistently directed is the Hydro-Electric Power Commission of Ontario, Canada.

That, in fact, has been termed the most notable government-owned public utility in the Western Hemisphere. Its activities, of course, are a matter of open record, but, as is not infrequent in such cases, opposing sides in the government vs. private ownership debate have, so far, failed to agree upon the conclusions to be drawn from that record. That fact, in view of the widespread interest taken in the subject, led the National Electric Light Association, the most enterprising and up-to-date body of its kind in the world, in an earnest desire for authentic and reliable information regarding the working and accomplishments of the Ontario Commission, to have a report made thereon based on an impartial and exhaustive study. Accordingly, the Asso-

ciation enlisted the services of Mr. W. S. Murray, who conducted the super-power survey for the United States Government on the Atlantic seaboard between Boston and Washington and who, in addition, is conversant with Canadian conditions. In this work Mr. Murray was assisted by his partner, Mr. Henry Flood, Jr., formerly secretary-engineer of the United States Government super-power survey organization.

Their report has just been made public by the National Electric Light Association. It covers investigations made by the gentlemen named during the period from August, 1921, to February, 1922, inclusive. In effect, the report finds that government ownership and operation of electric light and power utilities as exemplified by the Hydro-Electric Power Commission of Ontario is not a success, from the viewpoint of either service or low cost, as compared with privately owned and publicly regulated electric light and power companies in the United States and Canada.

In summarizing the results of the investigation the report asserts that no system of electric service such as that operated by the Hydro-Electric Power Commission of Ontario is applicable in the United States, for the reason that it is subversive of American policy and custom, and is inefficient, expensive and wasteful. It shows that the service rendered by privately owned utilities under public regulation is cheaper and better than that rendered by governmentally owned utilities, and even in Ontario, which has what is generally looked upon as the most successful example of government-owned utilities, private capital and enterprise have contributed more to the upbuilding of civic, industrial and commercial life than has the government-owned project.

Furthermore, the record shows that at the end of the fiscal year 1920, out of the total power plant capacity operated by the Hydro-Electric Power Commission only 23 per cent was constructed by the Commission, the remainder representing plant capacity constructed at the initiative and risk of private investors, and in acquiring ownership of its franchise rights, good will, and other intangibles were included in the purchase.

The report states:

"The advocates of government or municipal ownership of electric utilities claim reduction in the cost of power in virtue of the elimination of taxes, the elimination of dividends, the elimination of high salaried executives and more economical wage and higher efficiency in labor scale. Taxes are not eliminated. Just as much money in taxes is paid. The difference is in their distribution. In the case of private ownership only the users of service pay the tax bill, while in the case of government-owned utilities all the the people pay the bill.

"Notwithstanding dividends, high salaried executives and the wage and labor claim, the answer is, when the total operations are summed up, the people receive the power at less cost through private ownership under regulation.

"The investment of capital in electric utilities under private interest control is far better protected from extravagance than when that capital is governmentally owned, for the reason that plans and estimates for such capital expenditures not only must gain the approval of a trained engineering and managerial staff and an experienced board of directors of the companies, but it also must have the critical review of the banker and the private financial investor. In the case of government-owned utilities, the directing heads are seldom specially trained in the business under their jurisdiction and the value of the securities is not based upon the value of the property or the efficiency

of the management but upon the taxing power of the government.

"Governmental ownership eliminates all incentive for gain and throttles initiative. This is evidenced by the far greater growth of privately owned utilities.

"The Hydro-Electric Power Commission is the judge of its own acts. A Commission cannot fairly be the judge of its own—and others'—rights in contentions."

The *Sacramento Bee* calls attention to the fact that California is second of all the States in the Union in number of homes lighted with electricity. There are now 752,000 residential consumers of electricity in this State, a gain of 102,000 during the year 1921. This is according to a survey recently completed by the National Electric Light Association.

In proportion to population, however, California leads all the older and more populous States of the East. This is due, it is stated, to the large number of new homes being built in this State and to the rapid development of hydro-electric power plants.

Word has been received that one of the five directors selected for a two year term by the Auburn Chamber of Commerce is Mr. H. M. Cooper, Manager of our Drum division. Mr. Cooper has always taken an active interest in civic affairs and it is gratifying indeed to learn that his fellow-citizens have placed in him this showing of confidence and esteem.

IN MEMORIAM

S. P. BABCOCK

J. F. BRADY

MICHAEL COLLINS

We deeply mourn the loss, by death, of three old employees whose names stood upon the "Pacific Service" roll of honor, each one of them an example of long and faithful service rewarded by honorable retirement. Though gone from among us, their names and service records will be preserved in the annals of "Pacific Service" for all time.

S. P. Babcock. Died February 26, 1922. 78 years of age, having been born September 6, 1843. Entered the service of the Oakland Gas, Light and Heat Company, January, 1897. At the time of retiring on a pension, March 1, 1921, was in the East Bay Division.

J. F. Brady. Died February 11, 1922. 63 years of age, having been born August 1, 1858. Entered the service of the Pacific Gas Improvement Company in the meter department, September, 1884. At the time of retiring on a pension, December 1, 1916, was in the San Francisco Division.

Michael Collins. Died February 8, 1922. 71 years of age, having been born December 21, 1850. Entered the service of the Pacific Gas Improvement Company, gas department, September, 1882. At the time of retiring on a pension, March 1, 1917, was a laborer in the Redwood District.

Tidings From Territorial Divisions

East Bay Division

Oakland, situated on the east side of San Francisco Bay, is the third largest city in California, the fifth largest on the Pacific Coast, and the fastest growing industrial city in the west. It is possessed of delightful climate, is beautifully situated along the bay shore and is the terminus of five transcontinental railroads.

Though it has grown with tremendous rapidity, both from the standpoint of population and the standpoint of industry, Oakland is a city of homes. Stretching away from the bay there is ample room for a city of several million population before reaching the general sloping hills which have become the exclusive residential section of each of the several cities along both shores of the bay.

It is only in comparatively recent years that industries, recognizing the advantages offered by Oakland, began to claim the excellent factory sites along the bay shore. Today there are more than 13,000 plants, manufacturing more than 20,000 different products, in this great east bay city.

The population of Oakland was but 66,960 in 1900, and in 1920 it was 216,261, a gain of more than 306 per cent. During the ten year period between 1910 and 1920 Oakland gained 66,087, approximately 44 per cent.

Few cities in the United States can boast of a more perfect school system than Oakland, or more attractive school buildings. Noted educators from every section of the world have praised Oakland's educational facilities. The present school enrollment is in excess of 45,000. In Berkeley, which adjoins Oakland on the north, is the great University of California, the largest in the United States in point of enrollment and incidentally one of the richest in the matter of endowment.

In the city of Oakland proper, there are more than 395 miles of paved streets, 322 miles of sewers and 697 miles of sidewalks. Radiating from Oakland are paved highways running north, south and east.

Among these is the famous Lincoln Highway, which finds its east bay terminus in this city.

Oakland's climate is extremely equitable. The average temperature for the twelve months is 65 degrees. The days are never too hot for comfort and the nights are always cool. Seldom, even in the so-called winter months, does the mercury drop to 32 degrees. It is due to this ideal working climate that Oakland is one of the largest ship-building centers in the world.

Possessed as it is of all those things considered essential for a great metropolis, with five transcontinental railways, its position on one of the world's great land-locked harbors and with ample room in which to make a tremendous expansion, Oakland's future is assured.

During the month the first unit of the new Berkeley High School, costing \$340,000, was opened to the students, and is one of the most complete and up-to-date educational buildings in the State.

The first and second floors are made up of classrooms and an auditorium, and the main roof forms an open air court or sun deck. On each side of the main halls of the first and second floors 1,100 student lockers have been set in the walls.

To "Pacific Service" the most interesting feature of this building is the ground floor, of which the cafeteria occupies the major portion. This will accommodate about 500 at a "sitting" and is as modern and complete as any cafeteria around the bay region. In the kitchen are three Estate hotel ranges, one No. 115 Cabinet oven and one No. 6 Troop automatic water heater, also a Read No. 3 speed cake mixer and a Crescent dish washer, model AA. All these appliances are "fed" by "Pacific Service."

The work at the San Pablo dam of the East Bay Water Company is nearing completion after approximately three years of work. The contractors, Bates and Borland, maintained an installation of

about 1,200 horsepower which operated the hydraulic giants tearing away the adjoining hills, the rock and dirt being sluiced to the "puddle."

A special extension was made by "Pacific Service" to "feed" this job, a pole line of about $3\frac{1}{2}$ miles being necessary.

Six hundred thousand young tomato plants have just been set out in the recently completed hot house nurseries of the Kirsten Packing Company at Walnut Creek. The hot beds have been completed and the seed planted. According to officials of the concern there will be enough young tomato plants to provide for 600 acres of the growing vines. These will be sold to the farmers hereabouts, who will in turn dispose of their tomatoes to the packing concern for the manufacture of tomato sauce and canned tomatoes. The sauce is used by the company at its fish packing plant at Monterey in preparing canned sardines.

One hundred acres of spinach have also been planted near Walnut Creek, the Kirsten Company supplying the seed to the growers. Spinach seed is planted directly in the field, and transplanting, as in the case of tomatoes, is not necessary. The output of the big plant, which is being enlarged during the winter months, will be four times that of last year.

"Tofco Manufacturing Co." of Livermore derives its name from the first letters of the firm name, The Owens-Fredericksen Company. This concern, which began operations only last October, is now working night and day endeavoring to keep up with orders for its product. It is expected that before many months "Pacific Service" will be called upon to furnish a continuous load of 75 horsepower.

Tofco is a wallboard with a redwood core. It is not a substitute for lath and plaster but is lath, plaster and paper in its most durable, convenient and economical form. Laths are sawn from clear kiln-dried redwood, which is remarkably fire resisting and practically immune to rot. The paper covering is of heavy chipboard, sized to prevent the absorption of moisture from the air, and gives a perfect surface for papering, painting or tinting.

This is cemented into one solid, substantial mass by means of a waterproof paste which forms a thin plaster surface between the laths and paper. When this mineral paste once sets it seals the pores of the wood core and completely prevents it from absorbing moisture, for which reason it is not subject to expansion and contraction due to atmospheric change. It lies flat and does not crawl.

Tofco is made in strong, rigid sheets, one-quarter of an inch in thickness, four feet in width, and from four to sixteen feet in length.

The Tofco Company will have a working force of from 50 to 75 men before June, with a payroll of at least \$100,000 annually.

Concord seems destined to become one of the leading fruit shipping centers of the State. The Earl and Pioneer Fruit Companies have had packing houses there for several years and now the Brookside Fruit Company is getting ready to build. They will put up a packing house 40 by 75 feet in size and will handle all kinds of fruit. The San Francisco-Sacramento Railroad has moved its station and freight platform to the opposite side of the highway in order to make room for the new packing house. C. L. De-Benedetti is manager of the Brookside Fruit Company for this district.

Organized in 1916, the Fageol Motors Company engineered and introduced the famous Fageol Automobile De Luxe, at that time the costliest, fastest and most luxurious stock passenger car in the world. In 1917 ground was broken for the new plant on Foothill Boulevard. The first Fageol truck, built in the temporary building at Thirty-eighth Street and San Pablo Avenue, headed a parade of 300 automobiles on this occasion. Later in the same year, the company secured control of the Hamilton patents on a new drive principle for farm tractors. Rush Hamilton of Healdsburg, the inventor, joined the Fageol forces with the purchase of the patents.

During the war production was reached on a full line of heavy duty motor trucks, the original layouts for which were designed by Cornelius T. Myers, noted engineer, who later became

chief engineer in charge of the U. S. Army standardized trucks.

Delivery of tractors for farm and vineyard purposes began in 1918. Foreign trade was developed until now the company supplies the Pacific Coast and is sending its tractors to the Pacific Islands, many countries of Europe and the far east.

At present the Fageol Company is putting out a new type of highway maintenance trucks, passenger busses and stages. The Fageol inter-city stage was recently introduced. During the present year and next year the company will continue with its truck and tractor development and will bring out a full line of highway stages, gas street cars and deluxe cars for estates and ultrafine service.

Approximately 105 employees are now employed at the Foothill Boulevard plant.

J. C. J.

Drum Division

The following article appeared in the Grass Valley Union of February 19th. It gives fair credit to a deed of heroism which we believe is typical of "Pacific Service."

J. A. GILMORE IS CAUGHT UNDER FALLING BUILDING

The Pacific Gas & Electric Company has just received information concerning what might have been a fatal accident to J. A. Gilmore, who is employed by that company and the Middle Yuba River Hydro-Electric Co. in patrolling their pole lines.

On the morning of the 12th of February Gilmore started on his route as usual, and there being snow on the ground he was using skis. He went into an old building in an endeavor to obtain a snow shoe pole and while in the building it fell, due to the weight of snow.

Gilmore was caught in such a position by the falling debris that only his right arm was free, his legs and other arm being held fast by fallen timbers. His predicament was a serious one, as the spot was a lonely one, far from any source of aid.

With rare presence of mind Gilmore began the work of extricating himself, using only his right arm for that purpose. After an hour's work he managed to move the heavy timbers and the snow that was

pinning him down and freed himself from his perilous position.

He then took an account of his injuries, finding that he had nothing more serious than a badly sprained hip and shoulders. Regardless of this he resumed his patrol of his pole line, returning to his cabin at night almost exhausted.

The next morning despite the soreness resulting from his injuries he started out in a blinding snow storm to patrol his beat. He soon realized though that it would be more than dangerous to make the trip and useless, too, as he was in no condition to make repairs to the line if he found such to be necessary, so he returned to his cabin to await developments.

That evening men who had been sent out by the company to assist him arrived, and the next day, he, with their assistance, resumed work on the pole line and soon had everything in shape.

Gilmore's pluck under the circumstances is but the example of the hardihood and resourcefulness of the men of the mountains under any and all conditions.

H. M. C.

Fresno Division

The coming year of 1922 holds much promise for Fresno and environs. Building on every hand shows a marked speeding up which is not alone confined to the residential district. The Sun Maid Hotel Company has launched a campaign to raise funds for a million dollar hotel to be erected at the corner of Van Ness and Kern Streets. The proposed hotel is to be a ten-story, fireproof structure provided with every modern convenience. A modern roof garden is planned which will doubtless prove a great attraction on Fresno's warm summer evenings.

Rapid progress is being made toward completion of the plans for the Sugar Pine Mill, which will be located on a 640-acre tract on the outskirts of Fresno and bordering the San Joaquin River. The mill site was given to the company by the citizens of Fresno, funds for which were raised by public subscription. On this property a modern saw and planing

mill combined with a box factory will be erected, capable of handling upwards of 80,000,000 feet of lumber yearly. The motive power operating these plants will be largely electrical. Even in the mountains, where the company will carry on large logging projects, electric power will be used in handling the lumber. The company will also construct and operate the Minarets & Western Railroad, which will serve to bring the logs from the company's holdings in the mountains, some 65 miles distant, to the mill. The road, which will be standard gauge, will operate as a common carrier over a portion of the distance. The addition of a sawmill to Fresno's industries will aid greatly in the building activities of the city which is showing marked indications of becoming one of California's leading industrial centers.

The raisin, which is always a subject of interest to the people of Fresno, gives promise of being as popular a product in 1922 as it was in 1921, when over 18,000 tons of Thompson Seedless Raisins, put up in the popular 5-cent packages, were sold. This unparalleled feat of merchandising meant the packing, handling and marketing of 380,000,000 5-cent packages, or nearly four packages of "Little Sunmaids" to every man, woman and child in the United States. The management of the California Associated Raisin Company, or the Sunmaid Raisin Growers, as the company is now called, has decided to invade European markets, and to this end has opened a branch office in London, from which point the distribution and sale of California raisins will be carried on.

C. W. K.

West Side Division

The Company recently acquired a piece of property in Red Bluff, situated on Oak Street adjoining the Southern Pacific right of way, upon which has been erected a pumping station for unloading oil cars. The pump is electrically driven, the oil being forced through 1,800 feet of 4-inch pipe on Oak Street to the gas plant at Oak and Rio Streets.

Prior to the installation of the pumping plant the oil cars were hauled up to

the center of the city on a spur track on Oak Street and at this point the oil was turned into a 6-inch gravity line to the gas plant. This track has an early history, having been constructed in the year 1874 when the Sierra Lumber Company started operations with head office and factory in this city, but since December, 1898, the gas department has used the track for switching the oil cars.

The old Sierra Lumber Company was absorbed by the Diamond Match Company several years ago and the latter company abandoned the spur and tore it up from Main Street across the river. The track from Main Street east to the Southern Pacific Railroad was turned over to the Northern California Power Company. With the installation of the pumping plant and the laying of the new oil line to the gas works the spur track is not needed and has been removed and the street has been graded. Thus has passed another landmark and the property owners along Oak Street watched its passing with satisfaction.

The State Highway from Red Bluff south to Los Molinos on the east side of the Sacramento River was opened to traffic about February 7th. This is the last link of highway between Red Bluff and San Francisco. As soon as the new county court house is completed at Red Bluff, which is a matter of a few weeks, both the highway and the court house will be fittingly opened with a celebration.

The National Ice and Cold Storage has broken ground at Gerber for a 65-ton refrigerating plant for icing refrigerator cars. They will have a connected load of approximately 236 horsepower in motors. The plant will be ready about June 1st and "Pacific Service" will supply the power.

On January 24th of this year the new series street lighting system was put into service in the town of Willows. A total of 78 lights have been installed marking the passing of the same number of multiple arc lamps. All of the town to the west of the railroad has been cut over on the series system and the necessary work to

complete the change on the east side of the track is now under way. When all changes have been made Willows will be one of the best lighted towns in the Sacramento Valley. A similar system is being installed in Orland, to be completed some time in March.

R. W. M.

North Bay Division

The California Carbon Paper Manufacturing Company, operating the only plant of its kind west of Chicago, is now turning out high class carbon paper of all varieties at its plant, located at Santa Rosa. Raw materials for this industry are at the present time brought from all parts of the world; however, in time, most of the necessary raw materials will be produced here on the Pacific Coast. The extra light weight quality is made on an English paper, as at present no American factory has succeeded in turning out the so-called 4-pound paper. This grade weighs 4 pounds to every 500 sheets, 20 by 30 inches in size.

The Pacific Gas & Electric Company is assisting materially in this new venture. It was found that gas is a great convenience in the manufacture of carbon paper, as each mill in which the colors and chemicals are ground must be heated, and gas has proven to be the ideal fuel for this purpose. Each carbon machine is also supplied with a small steam boiler, and here again gas is the favored fuel, for the reason that uniformity of heat is under perfect control. Electric power furnished by "Pacific Service" is also a factor in this plant.

M. G. H.

San Joaquin Division

Word was received from Strawberry on February 17th that 108 inches of snow lay on the level at Relief Reservoir, which is located in Tuolumne County approximately 60 miles east of Sonora, and on the famous Mono Trail, used by the early settlers in this country during the years of '48 and '49. The elevation of Relief is 7,300 feet.

"Shorty" Harris, lake tender at Relief

for the past ten years, was unable to send in his usual weekly report by telephone due to the severe storms which resulted in the destruction of a considerable portion of the line, so he skied a mere 30 miles to Camp Strawberry, the nearest station, to send in his weekly report covering rain, snowfall and weather conditions generally. He reports that the winter has been the severest experienced at Relief since he was engaged as lake tender there. The snow, with a depth of nine feet, is thoroughly packed, and all indications promise an excellent season this year in the way of water run-off.

"Shorty" reports that due to the severe storms in the high Sierras wild animals of all descriptions are on the downward trail. On his trip to Strawberry he saw signs of bear, wild cats and a mountain lion, etc. He has also heard the howl of the wolverine which seldom makes its appearance on the western slope of the Sierras.

An extensive reconstruction program has been planned for the improvement of service in the territory south of the Tuolumne River and in Turlock particularly. This territory is now being served by a 30 000-volt line with substations at Empire, Hughson, Turlock and Hickman. Under the present plan the 30 K. V. line is to be replaced to a certain extent by a 60 K.V. line with one 60 K.V. substation of approximately 4,500 K. V. A. capacity at Hughson, from which several 17 K.V. lines will be extended to meet the requirements of the territory. At Turlock a 3,000 K.V.A. substation will be built and will be supplied by two 17,000-volt circuits from Hughson substation. The distribution will be standardized at 4,000 volts, replacing the present 2,200 and 6,600 volt systems.

An appropriation of approximately \$40,000.00 has already been authorized for the construction of the 60,000-volt line from Modesto to Hughson, and it is estimated that the total reconstruction will cost close to \$100,000.00.

Twenty-three miles east of Oakdale on the Stanislaus River is located the property of the Pacific Asbestos Corporation of California. This company, which is in-

corporated for \$3,000,000.00, owns in fee 300 acres in Calaveras County and claims a proven percentage of fiber in the rock of 5.17 per cent, which is equal to that of the huge deposits of asbestos fibered ore of the Province of Quebec in Canada.

The Asbestos company proposes to spend \$350,000.00 in erecting a mill capable of handling 1,000 tons of ore per day by the cyclone method. The method of mining for the present will be by quarrying. The works when in full operation will employ about 250 men.

It is of interest to note that the world's output of asbestos for 1921 amounted to 190,000 tons which was produced in Canada, South Africa and Russia; 90 per cent coming from Canada and 75 per cent consumed in the United States. If the hopes of the Pacific Asbestos Corporation of California are realized, Oakdale will take its place among the great producers of asbestos fiber of the world.

Following in the line of progress the town of Riverbank calls for our attention. Riverbank represents a section closely identified with the early history of Stanislaus County, and is located on the Stanislaus River 114 miles southeast of San Francisco. The location is ideal in every sense of the word, being on the main line of the Santa Fe and only a few hours from the best markets of the Pacific Coast.

The Santa Fe Railroad has taken advantage of the geographical location of Riverbank with regard to the business world and has there established its yards and shops, having about 150 men regularly employed with a monthly payroll of some \$35,000.00, and is at the present time erecting a \$250,000.00 ice manufacturing plant which will have a capacity of 150 tons per day and an installed capacity of about 700 horsepower in electric motors. "Pacific Service" is already supplying temporary service for construction purposes. The ice plant will, from present indications, be completed about June 1st.

Tracy again comes forth and announces a substantial addition to its industrial life with the locating of the General Milk

Products plant in that town. The proposed plant is to have a capacity of 500 cases of milk per day and the output to be limited to one high grade brand of condensed milk.

This company, which is incorporated for \$250,000, is headed by Chas. H. Fairer, president; Frank S. Glass, vice president, and Leon French, secretary and treasurer.

Wieland, Mazurette and Wieland, the engineers in charge of the construction of the plant, expect to start construction within six weeks and predict a construction period of 120 days, the cost of the plant to be approximately \$150,000.00.

That Stanislaus County, by reason of its growing forage and alfalfa at a minimum cost, has for a number of years led all other counties in California in the dairy industry explains, perhaps, the reason for the proposed \$40,000.00 plant to be built at Newman by the National Ice Cream Company of San Francisco.

Newman is the center of the West Side District where is due full credit for the early development of irrigation in California. As early as 1882 Miller & Lux had completed their gravity system which was later supplanted by pumping, resulting in yields of 8,810 tons of alfalfa per acre per annum. The district now boasts of eight creameries representing the largest and best milk interests of California.

S. J. D.

San Francisco Division

GAS GENERATION DEPARTMENT

The gas made during January and February showed an increase of 12.2 per cent over the amount made during the same months in 1921. This increase compares very favorably with that for the year 1921, which was only 5.4 per cent over the year 1920.

One more unit of boosting apparatus will be in operation at Potrero Plant before the end of March. This is a compressor of the centrifugal type operated by a variable speed motor and having a capacity of one and one-half million cubic feet of gas per hour at three pounds pressure.

The maximum day's send out this year was 27,278,000 cubic feet, occurring on Thursday, January 19. This was greater by 21 per cent than the maximum day's send out last winter. During the four days, January 18 to 21, the average hourly send out for all the plants in San Francisco combined was 1,108,000 cubic feet, continuing for 96 hours straight. The total send out for the four days showed an increase of 24 per cent over the same four days of last year.

J. M. D.

ELECTRIC DISTRIBUTION DEPARTMENT

The following letter speaks well for the speed and dispatch with which trouble is found and remedied by the distribution department:

A. H. PETTERSEN

MEN'S AND BOYS' CLOTHING, FURNISHINGS
AND HATS

2509-2511 Mission Street, nr. 21st
Feb. 27, 1922.

Mr. A. U. Brandt,
Manager of Distribution,
Pacific Gas & Electric Co.,
812 Howard St., City.

Dear Mr. Brandt:

Last evening at my home a fuse blew out and in my attempt to replace same several more blew out. This resulted in my being compelled to call on your Company for aid.

To my pleasant surprise within fifteen minutes your service machine was in front of my door with a capable man ready to render assistance.

In a very few minutes your service man had our flat "all lit up" and also showed us why our fuses continued to blow.

And the fact that this quick and efficient service was given us on a rainy night with skiddy and wet pavements, calls forth for double praise to your service department.

I have attempted in a small way to show my appreciation in this letter for the very good service given me.

Yours very truly,

A. H. PETTERSEN.

NEW BUSINESS DEPARTMENT

The most recent important commercial hot air heating plant was recently put into operation for heating San Francisco's famous "Tait's at the Beach."

This plant consists of four Hall unit gas furnaces from which the air is driven by a fan of 2,000 cubic feet of air per minute capacity through a series of heating pipes leading to nine outlets in various parts of the building. The cold air for the furnace is drawn directly from the large sitting room, thereby greatly accelerating the heating and circulation of air as well as greatly aiding to overcome some of the heating troubles caused by high winds and outward pressures.

Quite recently a meeting was held at our Gas Industrial Laboratory with the Master Plumbers Association of this city. This organization was specially invited to conduct its monthly meetings at our laboratory, we arranging a program for their entertainment. Mr. Frank Klimm, President of the Master Plumbers, stated that it was one of the most interesting meetings that they had ever attended, and considered it of great value.

For our part, we wish to say that we were indeed glad of the opportunity to address these men and to tell them all that we know in connection with the appliances on display at the laboratory, so that in their daily routine of business they may possibly find occasion to utilize this laboratory in order to sell some prospective customer of theirs the gas fuel idea. This arrangement should be of mutual benefit to both the Master Plumbers and the Company.

The meeting referred to was opened by a short address of welcome by Mr. Frank Talcott in the absence of Mr. Bostwick, and a letter was read from Mr. Bostwick welcoming the organization to the use of the laboratory. Following the opening address, Mr. Godfrey told of his personal experience with the New Business Department. Mr. Ross followed with a paper. Mr. Frank Mosher, of the Bryant Heater Company, gave a talk on the Bryant boiler. Mr. Fred Pelle demonstrated and answered questions on the different appliances and Mr. Wm. Henderson read a paper on "Combustion of Gas."

F. T.

“Switching” Investments

Suppose a company has two issues of 5% bonds outstanding—one due March 15, 1923, and one due March 15, 1942. Suppose further that the merit of the bonds and the credit of the company are such that both issues sell at prices to yield 6%. The market price of the one year bond will be 99.0433 and the market price of the twenty year bond will be 88.4426 in order to give a return of 6%.

It is obvious that the investor who wants his funds permanently invested should exchange from the short-term issue to the long-term issue and take the cash difference, which in the example given amounts to more than \$100 on a \$1000 bond.

If you hold securities maturing within the next few years, it is very possible that you can make an exchange into longer term securities to a very decided advantage. We shall be glad indeed to go into the matter with you and suggest a rearrangement of your holdings which will strengthen your investment position and give you definite advantages.

*Call at our office today or write for
information and let us make sug-
gestions for you.*

BLYTH, WITTER & Co.

MERCHANTS EXCHANGE

SAN FRANCISCO

OAKLAND OFFICE: EASTON BUILDING

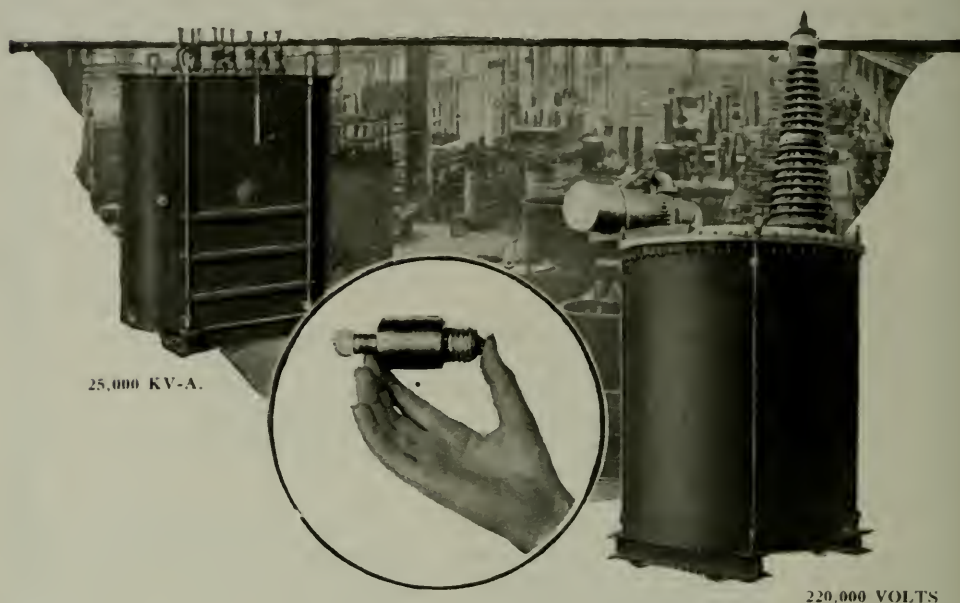
New York

Seattle

Portland

Los Angeles

The Importance of Transformers to Electrical Development is so great that there must be an absolutely reliable type made for every one of a wide variety of uses



You Can Rely on Them From Toy Size to Giant

Transformers must be absolutely reliable. Their functions are too important to permit of anything less. That is why there has always been centered upon G-E Transformer design and construction the most intense concentration of engineers and highly skilled craftsmen.

This concentration has produced transformers of the widest variety from the miniature in the All-Nite-Lite to the new 220,000-volt giants to serve a Pacific Coast transmission line. And it has produced apparatus which meets every requirement of every application whether it be for operating toys and ringing door bells from house lighting circuits, for delivering proper voltages at homes and industrial plants, for controlling high potentials at great hydro-electric power stations, or for handling large energies concentrated in a single unit such as the 25,000-kv-a. units on the Detroit Edison system.

Carry your transformer problem to the nearest G-E Sales Office.

General Electric Company
General Office
Schenectady, N.Y. Sales Offices in
all large cities

When writing please mention PACIFIC SERVICE MAGAZINE



TO carry on hydro-electric development in California last year \$36,500,000 bonds were sold to individual investors. Of this total E. H. Rollins & Sons participated in the original underwriting of \$26,500,000, or more than 72 %. The Pacific Gas & Electric Company \$10,000,000 First & Refunding Mortgage non-callable 6 % bonds were among these issues, in the underwriting and sale of which this investment bond house served both its clients and the State.

J. W. KERR, President

Established 1869

C. D. STEIGER, Secretary

Steiger & Kerr Stove & Foundry Co.

OCCIDENTAL FOUNDRY
Successors to Steiger & Kerr

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Machinery, Railroad, Architectural Castings, Bell and Spigot
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Standard Electroliers, Gasoliers and Lamp Posts

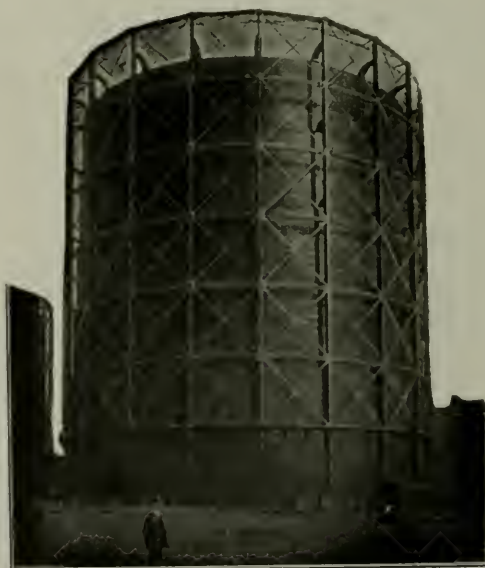
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ing Stoves for Wood or Coal.

Steel Range Dept.

Steel Ranges, Gas Ranges for
House, Hotel and Apartment.

Corner Folsom and Eighteenth Streets, San Francisco
TELEPHONE MISSION 250



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Gas Holders
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ALLIS-CHALMERS MANUFACTURING CO.

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District Office: Rialto Bldg., San Francisco, Calif.

Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

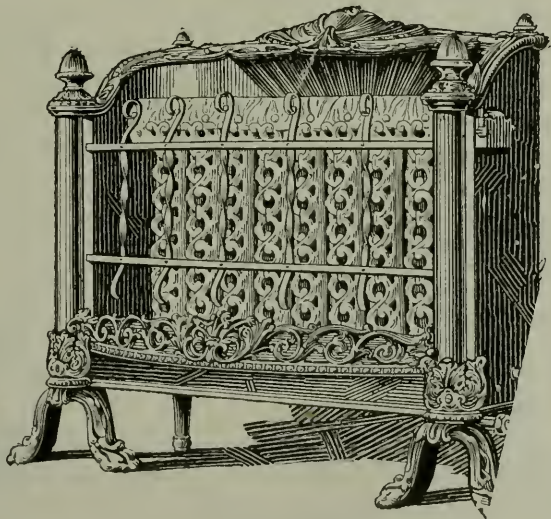
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, Califor

When writing please mention PACIFIC SERVICE MAGAZINE



AMONG those who know and have used STANDARD Wires and Cables, their superior quality is recognized in the form of frequent "repeat" orders. It is among those who have never used them that we solicit business. A trial order will prove this statement.

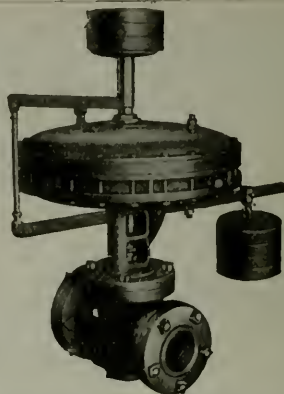
Standard Underground Cable Company

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The Fulton Gas Pressure Governors For Artificial or Natural Gas

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required. The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

Chaplin-Fulton Manufacturing Co.
PITTSBURGH, PA.

What More Could Any Housewife Ask for Than This Combination Gas Range Offers?

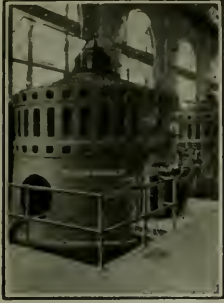


336 B.K. in Blue or Gray Enamel
Finish, Nickel Trimmed, with
Warming Oven

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

Wedgewood
QUALITY SERVICE FUEL ECONOMY

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PELTON

Reaction Turbines for Low-Head Plants are of two general types, the horizontal double-runner cylindrical-case design, and the vertical single-runner design with either concrete or steel-plate spiral casing.

THE PELTON WATER WHEEL CO.

Hydraulic Engineers

2217 Harrison Street, San Francisco, Cal.

WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

RIVETED STEEL PIPE, STAND PIPES, PENSTOCKS OR ANY SPECIAL
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ELEVATED STEEL TANKS—OIL OR PRESSURE TANKS

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Create Economy All Along the Line

IN FIRST COST • ADJUSTING • REPAIRS • UPKEEP
USED BY 90 PER CENT OF ALL CALIFORNIA GAS COMPANIES

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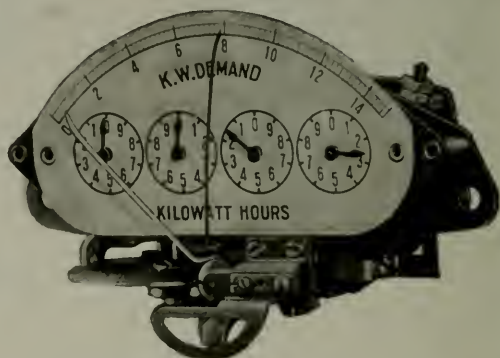
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SAN FRANCISCO, CALIF.

2136 ATLANTIC STREET
LOS ANGELES, CALIF.

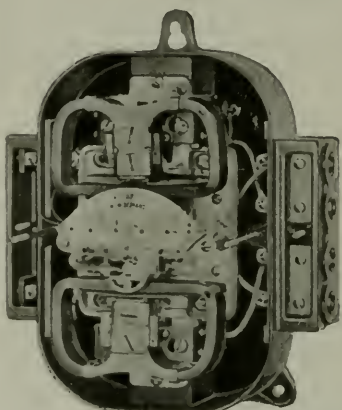
Westinghouse Demand Attachment For Type OA Watthour Meters



Type OA Watthour Demand Meter
Complete



Type OA Watthour Demand Meter Attachment



Type OA Watthour Demand Meter
Cover Removed

The Westinghouse Type OA Demand Attachment operates on the block interval principle. The demand scale is provided with two pointers to indicate demand and maximum demand. Virtually no time is lost between consecutive intervals.

The timing motor, with high torque, low loss and negligible voltage and temperature errors, imposes no load on the meter and does not interfere with its accuracy.

The demand attachment includes the watthour meter register, the demand register and the motor timing device.

By removing the standard watthour meter register, the Type OA Demand Attachment, with a special cover, can be used to convert Type OA Polyphase Watthour Meters into combined watthour and demand meters, or complete meters are furnished with this device.

Westinghouse Electric & Manufacturing Company

Newark Works, Newark, New Jersey

San Francisco, 1 Montgomery St.

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Westinghouse

Central Stations Throughout the West



Recommend EVERHOT Electric Water Heaters.

The Automatic Overheat Cutoff Switch, furnished without extra cost, eliminates the use of a thermostat as a protection to the heater.

PACIFIC MFG. & ELECTRIC CO.

Los Angeles, Calif.

San Francisco Distributor

ELECTRIC APPLIANCE COMPANY

807 Mission Street

San Francisco, Calif.



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of San Francisco

*Invites you to use its fully
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A Willing, generous service, cheerful in spirit—helpful by strength and conservative when necessary to maintain that strength.

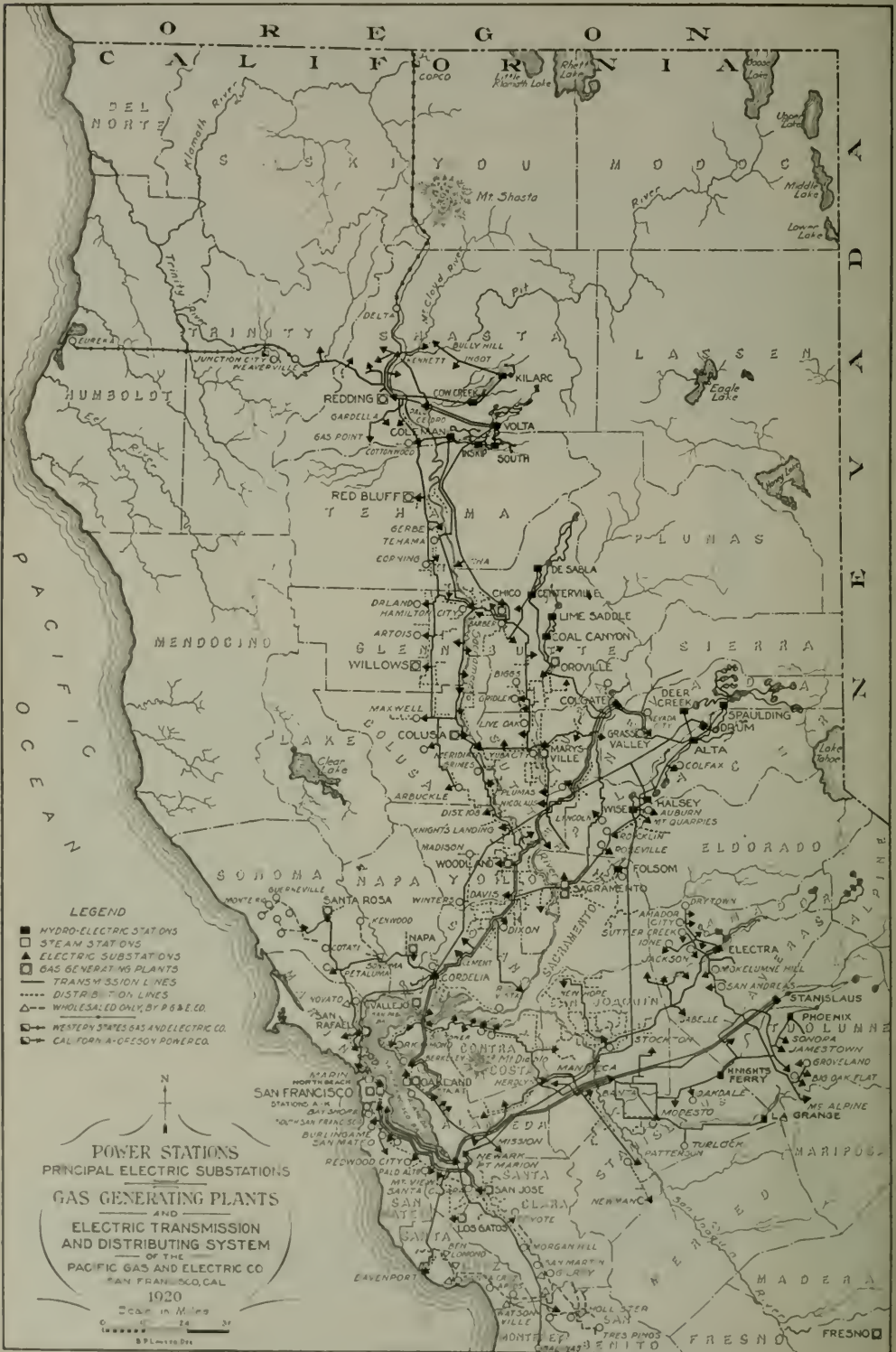
It Is our purpose to render a service that will demonstrate our sincere interest in the financial welfare of our customers and other friends.

*Four Per Cent interest allowed in
TIME DEPOSIT DEPARTMENT*

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California and Montgomery Sts.



Pacific Gas and Electric Company Furnishes

"PACIFIC SERVICE"

TO OVER 601,000 CONSUMERS OF

GAS. ELECTRICITY. WATER. STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

	DIRECTLY		INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity	171	1,120,503	60	153,449	231	1,273,952
Gas	56	1,127,009	2	8,600	58	1,135,609
Water (Domestic)	18	61,719	8	15,488	26	77,207
Railway	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population
¹ Alameda.....	28,806	¹ El Verano.....	400	¹ Meridian.....	200
² Albany.....	2,462	² Emeryville.....	2,390	² Millbrae.....	300
Alvarado.....	1,000	Escalon.....	600	Mills.....	400
Alviso.....	517	Esparto.....	200	Mill Valley.....	2,554
⁶ Amador City.....	377	² Fairfax.....	300	Milpitas.....	300
Anderson.....	750	Fairfield.....	1,008	Mission San Jose.....	500
Angel Island.....	500	Fair Oaks.....	300	Modesto.....	9,241
Antioch.....	1,936	Fall River Mills.....	300	Mokelumne Hill.....	900
⁶ Aptos.....	300	Farmington.....	300	Monterey.....	5,479
Arbuckle.....	900	Felton.....	300	⁶ Morgan Hill.....	646
⁶ Artherton.....	500	Folsom.....	2,000	Mountain View.....	1,888
⁶ Auburn.....	2,289	⁶ Forestville.....	250	Mt. Eden.....	200
² Barber.....	500	⁶ Fresno.....	45,086	Napa.....	6,757
² Belmont.....	375	⁶ Gilroy.....	2,862	² Napa City.....	1,782
Belvedere.....	616	⁶ Glen Ellen.....	1,000	Newark.....	500
⁶ Benicia.....	2,693	⁶ Gonzales.....	500	Newcastle.....	306
⁶ Ben Lomond.....	400	² ⁶ Grass Valley.....	4,006	Newman.....	750
⁶ Berkeley.....	56,036	⁶ Gridley.....	1,636	Niles.....	1,251
⁶ Biggs.....	683	⁶ Grimes.....	500	⁶ Novato.....	1,000
Bolinas.....	200	⁶ Groveland.....	500	Oakdale.....	400
Brentwood.....	400	⁶ Guerneville.....	800	² Oakland.....	216,261
² Broderick.....	700	⁶ Hamilton City.....	250	Oakley.....	200
⁶ Burlingame.....	400	⁶ Hammononton.....	3,487	Occidental.....	600
Byron.....	350	⁶ Hayward.....	3,373	Orland.....	1,582
Campbell.....	600	⁶ Hercules.....	931	³ Oroville.....	3,340
⁶ Capitola.....	300	⁶ Hillsborough.....	2,781	Pacheco.....	300
⁶ Carmel.....	638	Hollister.....	500	Pacific Grove.....	2,974
Cement.....	1,000	Honcut.....	250	² ⁶ Palo Alto.....	5,900
Centerville.....	1,000	⁶ Hughson.....	1,000	Paradise.....	694
Ceres.....	637	⁶ Irvington.....	1,000	Patterson.....	200
² Chico.....	9,339	⁶ ⁶ Jackson.....	1,601	⁶ Penn Grove.....	250
⁶ Colfax.....	573	⁶ ⁶ Jamestown.....	750	⁶ Penryn.....	300
College City.....	250	Kennett.....	464	Perkins.....	500
Collinsville.....	1,500	⁶ Kentfield.....	500	² Petaluma.....	6,226
⁶ Colma.....	200	⁶ Kenwood.....	300	² Piedmont.....	4,282
² Colusa.....	1,846	⁶ Keswick.....	200	⁶ Pike City.....	200
Concord.....	912	⁶ King City.....	1,048	⁶ Pinole.....	967
Cordelia.....	300	⁶ Knights Ferry.....	200	⁶ Pittsburg.....	4,715
Corning.....	1,449	⁶ Knights Land- ing.....	400	⁶ Pleasanton.....	991
Corte Madera.....	607	⁶ La Grange.....	200	Port Costa.....	300
² ⁶ Cotati.....	200	² Larkspur.....	612	Princeton.....	300
Cottonwood.....	500	Lathrop.....	600	² Red Bluff.....	3,104
Coyote.....	200	Lewiston.....	200	Redding.....	2,962
Crockett.....	1,500	⁶ ⁶ Lincoln.....	1,325	² Redwood City.....	4,020
Crow's Landing.....	300	⁶ Live Stock.....	300	² ⁶ Richmond.....	16,843
² Daly City.....	3,779	⁶ Livermore.....	1,916	Rio Vista.....	1,104
Danville.....	400	⁶ Lomita Park.....	600	Ripon.....	500
Davenport.....	300	⁶ Loomis.....	500	Riverbank.....	200
² Davis.....	939	⁶ Los Altos.....	500	⁶ Rocklin.....	643
Decoto.....	300	⁶ Los Gatos.....	2,317	⁶ Rodeo.....	300
⁶ Del Monte.....	300	⁶ Los Molinos.....	200	⁶ Roseville.....	4,477
Demar.....	200	⁶ Madison.....	300	⁶ Ross.....	727
⁶ Dixon.....	926	⁶ Manteca.....	1,286	⁶ Sacramento.....	65,908
⁶ Drytown.....	200	⁶ Mare Island.....	600	⁶ Salinas.....	4,308
⁶ Duncan's Mills.....	200	⁶ Martinez.....	3,858	⁶ San Andreas.....	1,183
Durham.....	250	⁶ Marysville.....	5,461	⁶ San Anselmo.....	2,475
⁶ Dutch Flat.....	750	⁶ Maxwell.....	500	⁶ San Bruno.....	1,562
⁶ Elbridge.....	500	⁶ Mayfield.....	1,127	⁶ San Francisco.....	506,676
⁶ El Cerrito.....	1,505	² Menlo Park.....	900	⁶ San Jose.....	39,642
Elmira.....	350			⁶ San Juan.....	350

Unmarked—Electricity only.

¹—Gas only.²—Gas and Electricity.³—Gas, Electricity and Water.⁴—Gas, Elect. and St. Railways.⁵—Electricity and Water.⁶—Electricity supplied through other companies.⁷—Gas supplied through other companies.⁸—Water supplied through other companies.**"PACIFIC SERVICE FACTS"**

The twenty-eight water power plants operated by "Pacific Service" generated in 1921, 1,025,611,300 kw. hours or approximately 32% of the total water power generated in California, and 7% of the total generated in the United States for the same period.

Operates 28 Hydro-Electric Plants.

Operates 4 Steam-Electric Plants.

Operates 19 Gas Plants.

Total Cities
and Towns.....1,347,844
Add Suburban
Population.....368,115
Total Popula-
tion Served.....1,715,959



“I guess—”

TOO OFTEN a guess on investments means as little as a guess on the weather.

A carefully selected investment must be based on a study of facts—not guesses.

Our representatives who talk with an average of 3000 banks a day are welcome because they are offering securities which have been bought on facts, not guesses.

Select your investments as carefully as your banker selects his.

We invite you to get in touch with our nearest office. Write for Current List.



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PACIFIC SERVICE MAGAZINE

PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



WISE POWER HOUSE IN THE DECORATIVE SETTING OF SPRING

Vol.
13

APRIL

No.
11



Executive officers of "Pacific Service." At the upper center is seen Mr. Wigginton E. Creed, our company's president; to the left, Mr. John A. Britton, first vice-president and general manager; to the right, Mr. A. F. Hockenbenmer, second vice-president and treasurer. At the lower center is seen Mr. D. H. Foote, secretary of the company; to the left of him, Mr. Leroy Moore, assistant treasurer; to the right, Mr. Chas. L. Barrett, assistant secretary.

PACIFIC SERVICE MAGAZINE

Volume XIII

APRIL, 1922

Number 11

The "Pacific Service" Record for 1921

Reports Upon Our Company's Activities Show Remarkable Progress in Improvements of Service in Every Direction. Volume of Business the Largest in the Company's History.

THE annual meeting of our company's stockholders was held on the afternoon of Tuesday, April 11, at 445 Sutter Street, San Francisco. Reports of the company's activities for the year just closed were presented by Vice-President and General Manager John A. Britton and Second Vice-President and Treasurer A. F. Hockenbeamer, respectively, the first dealing with operating and the second with financial features of the "Pacific Service" record for 1921.

President Creed was in the chair and in the course of a brief address told the stockholders present of a move recently made by the company toward the erection of a general headquarters building in San Francisco. A lot suitable for the purpose, announced Mr. Creed, had been purchased on Market Street at the corner of Beale, and plans were in course of preparation for the erection of a building sufficiently commodious to house "Pacific Service" for many years to come. Announcement was made, also, that the present building at 445 Sutter Street would be given over to the San Francisco Division for its permanent headquarters.

Discussing the activities of the past year Mr. Creed made special mention of the stockholders meeting, held in various sections of "Pacific Service" territory. It was proposed, he said, to provide a sufficiently spacious assembly hall in the new headquarters building, which from time to time would be used as a means of bringing "Pacific Service" and its stock-

holders and consumers into personal communication with one another.

The year 1921 may be regarded in many ways as the most progressive in the history of the company. In addition to completion of its work of departmental reorganization, particulars of which have already been given in these columns, much was done in the way of new construction, on both the gas and electric sides, and the year's record is one of increased efficiency in operation.

Such an organization, backed with the loyal hearts and willing hands of every man and woman who proudly carries on the great work of serving the public, the coming year promises to even eclipse the record of the one just past. All indications point to a year of abundant water power, with hydro-electric development in progress on a scale as never before attempted, and so the outlook is bright indeed. President Creed thus comments upon improving business conditions:

"The business situation has been slowly but surely working to the advantage of the gas and electric industry. The volume of new business in sight is encouraging and the burdens endured during the war period have almost disappeared. Adequate supplies of gas and power are available. The credit of the industry is high and its securities are exceedingly popular with investors throughout the country."

Reports of Messrs. John A. Britton and A. F. Hockenbeamer are given in synopsis herewith.

Editor PACIFIC SERVICE MAGAZINE.

Report of John A. Britton

FIRST VICE-PRESIDENT AND GENERAL MANAGER

The company's operations now embrace thirty six counties in north-central California, supplying a territory containing an estimated population of 2,000,000.

In its activities it uses 772 motor vehicles and employs at the present time 8,213 men and women.

It contributes to the material wealth of the State, in payment of services rendered, materials purchased and disbursement of dividends and bond interest upwards of thirty millions of dollars annually.

It owns in fee 99,634 acres of land in the State and operates thirty-two power plants and nineteen gas plants.

It has been the pioneer in long distance high tension transmission, in regulation of energy by means of load dispatchers, in high head development in water power plants, in publication of a house organ, in sales to consumers of its securities. It has made possible through the flexibility and diversity of its system the longest interconnected series of electric distributing systems in the world. It is now building the highest voltage line, namely at 220,000 volts. It pioneered the oil gas process and high pressure gas distribution, and many other noteworthy and economic procedures.

It has an employees' pension plan, an employees' association of 4,600 members, banded together as an independent organization for educational and social purposes. Finally, it aims to represent *Service* in its fullest expression to its consumers.

I mention at this point a few of the most important incidents occurring during the year:

March 12.—Additional steam electric generating unit at Station "C," Oakland, completed and placed in operation, capacity 16,756 H.P.

August 23.—Hat Creek Plant No. 1 completed and put into service, capacity 16,756 H.P. This is the first of the plants on the Pit River Development to be completed.

September 28.—Hat Creek Plant No. 2 completed and placed in operation, capacity 16,756 H.P.

September 12.—Spring Gap Plant on Stanislaus River completed and placed in operation, capacity 10,054 H.P., an addition to Sierra and San Francisco Power Company's system.

Construction work on Pit No. 1 hydro-electric plant, on the Pit River, which will have a capacity of 93,834 horsepower was started on January 25, 1921 and has progressed steadily throughout the year. Excavation of the tunnel was completed on December 31, 1921. The entire plant is scheduled to be completed and in operation by September 1, 1922.

September 19.—The Pit River Railroad, consisting of thirty-four miles of main line, completed. The first locomotive arrived at Pit River on September 20. This road was built to facilitate the construction of the Pit River Projects.

July 23.—Work of increasing capacity of 60,000-volt line from Cottonwood to Colusa Junction completed. Length of line 95 miles.

July 30.—Work of increasing capacity of 60,000-volt line from Kennett to Cottonwood completed. Length of line 35 miles.

September 2.—Pit Transmission Line No. 2 between the Hat Creek Plants and Cottonwood completed and placed in service. Length of line 60 miles. The present voltage is 60,000, but the line is designed for an ultimate voltage of 220,000.

April 23.—High pressure gas transmission line between Sacramento and Woodland completed, Woodland gas plant shut down and gas first supplied to the City of Davis.

October 21.—Additional gas generator at Station "B," Oakland, completed and put in service. Its capacity is five million cubic feet per day.

November 1.—High pressure gas transmission line between San Jose and Los Gatos completed and Los Gatos plant shut down. Gas was first supplied to the town of Campbell, March 17, 1922.

The total number of consumers served on December 31st, 1921 was as follows:

		Gain Over 1920
Electric.	285,206	18,957
Gas	297,270	10,728
Water	16,162	-72*
Steam	475	24
Total	599,113	29,637

*Decrease.

The total amount expended for labor during the year was \$13,205,372.78, an increase over 1920 of \$2,288,033.42.

The average number of employees in 1921 was 7,897, and the average daily wage paid to each employee, including executive officers, was \$5.57.

The gross expenditures for additions and betterments during the year, including the Mt. Shasta Power Corporation but not including the leased properties of the Sierra and San Francisco Power Company, amounted to \$18,651,563.00, of which there was charged to operating expenses through the medium of depreciation reserve \$611,169.00, leaving a balance carried to plants and properties account of \$18,040,394.00.

The operating revenues from all departments for the year 1921 totaled \$36,939,-

474.00, of which 61 per cent was derived from electric sales, 34 per cent from gas sales and the remaining 5 per cent from water, steam and street railway operations. Operating revenues increased \$2,457,514.00 over the year 1920. Operating expenses amounted to \$27,348,162.00, distributed as follows: Labor, \$8,464,590.00; fuel oil, \$6,611,716.00; power purchased, materials and supplies and miscellaneous, \$4,456,817.00; taxes, \$3,265,895.00; rentals for lease of other plant \$950,066.00; reserve for casualty and uncollectible accounts \$530,000.00; reserve for depreciation, \$3,069,078.00. Operating expenses increased \$1,102,220.00 over 1920.

The total oil used in all departments during the year 1921 was 3,713,717 barrels, of which 303,369 barrels were consumed by the Sierra and San Francisco Power Company's plant at North Beach, San Francisco. Deducting this latter amount from the total used, gives an amount of 3,410,348 barrels of oil used by all departments exclusive of the Sierra properties, a decrease as compared with 1920 of 752,917 barrels, or 18%. For the year 1921, 1,264,827 barrels were used for generating electric power, a saving as compared with 1920 of 1,170,203 barrels, or 48 per cent.

This very large saving in fuel oil was made possible by the reduction of load on our steam operated plants due to the greater amount of hydro-electric energy available for use during the year. The production statement given below shows the increase in hydro-electric energy generated and purchased and the decrease in steam generated energy. A larger amount of hydro-electric power was available in 1921 due to a more favorable flow of water in the mountain streams; and also the bringing into service of the two new Hat Creek plants and the Spring Gap plant, and to the increased amount

of hydro-electric power available for purchase from other companies.

Oil used in the manufacture of gas in 1921, amounted to 2,317,996 barrels, an increase over 1920 of 4 per cent, but due to greater economies the gas manufactured increased 7 per cent over 1920.

These economies resulted in a saving in money expended for fuel oil in all departments of \$2,257,920 over the year 1920.

PRODUCTION OF ELECTRIC ENERGY IN K.W.H. ENTIRE SYSTEM

Source	Year 1921	Year 1920	Per Cent Increase	Per Cent of Total 1921	Per Cent of Total 1920
Hydro.....	1,025,611,300	861,718,698	19.02	68.88	58.40
Steam.....	240,568,150	487,896,760	-50.69*	16.15	33.06
Purchased.....	222,909,207	126,063,215	76.82	14.97	8.54
Total.....	1,489,088,657	1,475,678,673	.90	100.00	100.00

*Decrease.

ELECTRIC ENERGY PRODUCED BY NEW HYDRO-ELECTRIC PLANTS COMPLETED AND PLACED IN OPERATION DURING 1921

		Placed in Operation
Hat Creek No. 1.....	13,201,672 KWH.....	Aug. 23, 1921
Hat Creek No. 2.....	15,283,000 KWH.....	Sept. 28, 1921
Spring Gap.....	8,599,000 KWH.....	Sept. 12, 1921
Total.....	37,083,672 KWH.	

The system load factor 1921 was .639 as against .649 in 1920; the highest peak of the year occurred on November 29th of 356,468 H. P. The average daily load was 227,865 H. P.

CONNECTED LOAD AS OF DECEMBER 31, 1921

Commercial and Residential Lighting.....	350,788 H.P.
Street Lighting.....	7,011
Cooking and Heating.....	16,356
Other Electric Corporations.....	65,366
Mining Motors.....	37,979
Agricultural Motors.....	149,101
Electric Railway Motors.....	103,136
Manufacturing Motors.....	212,421
Miscellaneous Power.....	101,769

Total 1921.....	1,043,927 H.P.
Total 1920.....	941,795
Increase.....	102,132 H.P.
Increase.....	10.8%

The capacities of the plants of the company generating electric energy are as follows:

HYDRO-ELECTRIC:	County	Capacity in Horsepower
Plants		
Alta.....	Placer.....	2,681
Centerville.....	Butte.....	8,579
Coal Canyon.....	Butte.....	1,341
Coleman.....	Shasta.....	20,107
Colgate.....	Yuba.....	20,878
Cow Creek.....	Shasta.....	2,011
De Sabla.....	Butte.....	17,426
Deer Creek.....	Nevada.....	7,373
Drum.....	Placer.....	33,512
Electra.....	Amador.....	26,810
*Fall River Mills.....	Shasta.....	1,274
Folsom.....	Sacramento.....	4,021
*Hat Creek No. 1.....	Shasta.....	16,756
*Hat Creek No. 2.....	Shasta.....	16,756
Halsey.....	Placer.....	16,756

Inskip...	Tehama.....	8,043
Kilare.....	Shasta.....	4,021
**La Grange.....	Stanislaus.....	1,206
Lime Saddle.....	Butte.....	2,681
**Phoenix.....	Tuolumne.....	2,513
South.....	Tehama.....	5,362
Spaulding No. 1.....	Nevada.....	5,027
Spaulding No. 2.....	Nevada.....	1,341
**Spring Gap.....	Tuolumne.....	10,054
**Stanislaus.....	Tuolumne.....	45,576
Volta.....	Shasta.....	8,378
Wise.....	Placer.....	16,756
Trinity.....	Trinity.....	1,005
Total Hydro-Electric.....		308,244
STEAM:		
San Francisco.....	San Francisco.....	85,791
Oakland.....	Alameda.....	44,906
Sacramento.....	Sacramento.....	6,702
**North Beach.....	San Francisco.....	36,193
Total Steam.....		173,592
TOTAL HYDRO-ELECTRIC AND STEAM.....		481,836
*Mt. Shasta Power Corporation.		
**Sierra and San Francisco Power Company.		

The following is a brief description of the electric transmission and distribution facilities for supplying the 285,206 consumers connected to the system:

Miles of 110,000 volt line.....	514.9
Miles of 60,000 volt line.....	2,042.4
Miles of 24,000 volt line.....	216.7
Total high tension lines.....	2,774.0
Miles of overhead distribution lines less than 20,000 volts.....	7,050.97
Miles of underground distribution.....	145.98
Total distribution.....	7,196.95
TOTAL TRANSMISSION AND DISTRIBUTION SYSTEM.....	9,970.95

GAS DEPARTMENT

There were in operation nineteen plants as follows:

	Sales in Cubic Feet
San Francisco, 2 plants, supplying 8 cities and suburban territory.....	5,542,378,600
Oakland, supplying 8 cities and suburban territory.....	3,588,494,200
San Jose.....	396,704,600
Fresno.....	460,213,600
San Rafael, supplying 4 cities and suburban territory.....	114,736,200
Santa Rosa, also supplying Petaluma and Sebastopol.....	130,204,200
Napa.....	40,834,400
Vallejo.....	129,300,400
Chico, supplying two cities.....	47,362,900
Grass Valley, also supplying Nevada City and suburban territory.....	18,647,600
Sacramento, also supplying Davis and Woodland.....	479,569,000
Marysville, also supplying Yuba City.....	47,968,600
Colusa.....	15,789,500
Oroville.....	21,043,700
Los Gatos.....	17,941,200
Red Bluff.....	11,279,100
Redding.....	13,377,900
Redwood City.....	392,575,000
Willows.....	15,130,400
Total Sales in Cubic Feet.....	11,483,551,100

To supply this amount of gas required 3,168 miles of gas mains. The increase in sales over 1920 was 838,901,100 cubic feet, or 7.88 per cent.

STREET RAILWAY

Miles of track 44.17. Passengers carried 16,021,805, gain over 1920, 251,510 or 2 per cent.

	1920	1921
Number of conductors and motor-men.....	231	235
Total number of car miles run.....	3,210,112	3,380,119

The company has now in operation ten one-man cars.

WATER DEPARTMENT

The company operates eight pumping stations with a capacity of 41 million gallons daily. Three are located in the City of Stockton, one in Livermore, one in Dixon, one in Redding and two in Willows. It irrigates in addition, by a system of seventy reservoirs and 601 miles of ditches over 20,000 acres of land in Placer, Nevada and Butte Counties.

STEAM DEPARTMENT

Steam is supplied for heating purposes in the cities of San Francisco and Oakland.

Number of Stations operated.....	4
Miles of steam mains in use.....	10.65
Number of consumers served.....	475

CLAIMS AND SAFETY

The total expenditure for accidents and damages during the year was \$191,240.49. Of the total expended \$95,614.58 went for compensation and medical expenses. The cost of compensation and medical expenses per employee was the same as in 1920, \$12.11.

The Central Safety Committee kept in close touch with the Safety Department of the Industrial Accident Commission, and, as in other years, had the record of not being once cited or even questioned as to any violation of any safety rule or order.

OTHER DEPARTMENTAL ACTIVITIES

The Property Department reports a total amount of insurance in force of \$7,206,230.00, covering 737 pieces of property. The average net fire loss in thirteen years has been \$8,758.63.

The Sales Department reports the following interesting facts. The electrical

cooking and heating load amounted to 16,357 horsepower on December 31, 1921, an increase of $33\frac{1}{3}$ per cent over 1920. Energy sold for this purpose during the year totaled 6,200,000 K.W.H. Sales of gas per consumer increased from 37,149 cubic feet in 1920 to 38,630 cubic feet in 1921, an increase of 4 per cent.

The Law Department reports that during the year fifty-three new suits were instituted to which the Pacific Gas and Electric Company or the Mt. Shasta Power Corporation was a party. Twenty-seven of these suits were condemnation cases brought to condemn rights of way for electric transmission lines or riparian rights required by the company.

The Land and Tax Department reports increased activities during the year on account of the large amount of construction work under way. The department also has charge of the natural gas exploration work in Solano County.

The company has been engaged for over two years in a comprehensive inventory and appraisal of its entire properties. The appraisal of the electric properties was completed during the year and the results presented to the Railroad Commission. Some idea of the amount of detail involved may be gained from the statement that the appraisal of the electric properties alone involved a total of 35,000 man-days of work.

During the year the Rate Department took care of 53 formal applications before the Railroad Commission, the more important being: First, the gas rate decision, establishing basic gas rates and providing

for automatic adjustments in the future in accordance with the increase or decrease of the price of oil; second, the electric rate decision, reducing the surcharge from 15 to 6 per cent, while still maintaining the same net return to the company.

On June 1st a new department, known as the Personnel Department, was organized, for the purpose of selecting employees most competent and deserving of promotion from among the company's ranks and to keep the personnel of the organization to the highest possible standard.

With the adoption of the extensive construction program on the Pit River there was realized the need of a department, the major activities of which would be especially in technical investigation and planning, as distinguished from the construction and operation of the properties. As a result the Department of Engineering was organized in October, 1920. This department is charged particularly with the responsibility for initiating the necessary engineering program by means of which the company is to meet the demands of its present and prospective consumers.

The many improvements made in electric, gas and water service throughout the territory served have done much to improve our public relations and we have started this year with favorable sentiment toward the company and its activities.

It is a pleasure to me to be able to again express my sincere appreciation for the loyal and effective work rendered by all officers and employees during the year.



Report of A. F. Hockenbeamer

SECOND VICE-PRESIDENT AND TREASURER

INCOME AND EXPENSES

As the Company's income account statement for the year 1921 has already been published in the newspapers and in PACIFIC SERVICE MAGAZINE, I will only touch upon it very briefly at this time.

The volume of business, measured by gross operating revenue of \$36,939,474, exceeded that of the preceding year by \$2,457,514 and was the largest in the Company's history. In 1916 our gross operating revenue was \$18,615,498. In the five years since then it has increased by \$18,323,976. In other words, the business has practically doubled in five years.

Net income available for bond interest, after the deduction of maintenance, operating expenses, taxes and reserves for uncollectible accounts and casualties, was \$13,230,622, an increase of \$1,702,472, or about 15.4% during the year.

Under the terms of our First and Refunding Mortgage the issuance of additional bonds is dependent upon interest charges being earned at least one and three-fourths times. In 1921 this ratio was 2.14 times. In other words, we exceeded the very conservative provision of our mortgage by \$2,400,000.

The balance remaining after the deduction of \$5,192,314 for bond interest and discount was \$8,038,308, and after a further deduction of \$3,069,078 as a reserve for renewals and replacements, there was carried to surplus available for dividends \$4,969,230, an increase of \$1,047,170, or 27%, as compared with the preceding year.

Of this surplus of \$4,969,230, preferred stock dividends absorbed \$2,132,283, or about 43%, leaving a balance of \$2,836,947, equivalent to 8.3% on our common stock. We paid 5% dividends on our common stock during the year, amounting to \$1,700,883, which left a balance of

\$1,136,064 to be added to our unappropriated surplus, which, at the close of 1921, stood at \$7,946,336.

The detailed analysis of our gross earnings, which you will find in the annual report when it reaches you, again illustrates the stabilizing influence of the diversity of our business. Owing to the business depression in 1921, which affected especially the agricultural, mining and manufacturing industries, our electric business in these departments was either at a standstill or fell off substantially. On the other hand, the growth of our commercial and residential business was sufficient to offset these handicaps; so that we wound up the year with an actual increase in electric sales of \$924,283. The Gas Department came through with a splendid increase of \$1,408,360, which was actually a greater increase by \$180,000 than we had in 1920, notwithstanding the depression.

The total amount of our taxes in 1921 was \$3,265,894, an increase of 236% in five years. This item of expenses in 1921 absorbed 8.84% of the gross operating income and 23.65% of the net operating income of that year.

That the Company has followed the customary policy of maintaining its properties in a high state of efficiency is indicated by the usual ample upkeep provisions. We expended for ordinary maintenance in 1921, \$3,437,673 and set aside \$3,069,078 as depreciation reserve, making the total expended or appropriated from revenues for upkeep during the year \$6,506,751, or 17.6% of our operating gross. This was \$977,810 more than in the preceding year.

CONSERVATION OF ASSETS

You will also find in the annual report when it reaches you a very interesting and important table headed "Conservation of

Assets," going back to the incorporation of the Company in 1906. It shows that of the \$69,443,894 of revenue earned during this sixteen-year period, and remaining after the payment of maintenance, operating expenses, taxes and interest, only \$24,116,000, or 35%, was paid out in cash dividends. Of the remainder, \$15,221,000 was expended for replacements and rehabilitation, and \$29,352,000 used to retire bonds or re-invested in the property. This is a record of conservatism, constituting a large factor in the Company's present strong financial position.

Reserves for depreciation and other contingencies stood at \$14,851,679 at the close of the year, an increase of \$2,365,462, as compared with the preceding year.

PLANTS AND PROPERTIES

The Plants and Properties of the Company were carried on the books at the close of the year at \$182,696,017. This is very much less than the actual value of these properties as determined by a recent exhaustive appraisal. Expenditures for additions, betterments and improvements during the year were \$18,040,393.

FUNDED DEBT

In order to provide funds for carrying on its extensive construction program, particularly its new hydro-electric developments on the Pit River, the Company issued during the year additional bonds amounting to \$20,720,000. A large proportion of the cash realized from the last issue of \$10,000,000 of these bonds is still on hand and will serve to meet construction expenditures during 1922. Offsetting this increase, we reduced the outstanding amount of underlying bonds by \$2,982,900, which left a net increase in the funded debt of \$17,737,100. Our investment in uncompleted construction work, which had not yet reached the income-producing stage, was \$15,814,639 at the close of the year. The larger portion of this investment will become productive on or about September 1st, 1922, with the completion of our Pit

River Power Plant No. 1, and the economies that will immediately result from the large additional supply of hydro-electric energy from this source will, it is estimated, more than take care of the fixed charges on the additional capital investment.

CAPITAL STOCK

During the year \$7,491,550 of additional First Preferred Stock was sold directly to our customers and others living within our territory, making a total of \$25,917,600 disposed of in this manner since June, 1914, when the Company first inaugurated its policy of "home ownership" and "popular partnership." The proceeds of the additional stock were, of course, devoted solely to the construction of additions, betterments and improvements necessary to meet the Company's growing business.

At the close of January, 1922, the Company was owned by 19,214 stockholders, of whom 79% were residents of California. Including bondholders, there were on that date more than 49,000 investors in this Company's securities, of whom 32,622, or 66.52%, were located in California.

SINKING FUNDS

During the year the Company purchased in the open market bonds of its underlying issues suitable for sinking fund investments of the par value of \$1,555,900. The unsettled conditions that prevailed generally throughout the greater part of the year in the markets for investment securities of all kinds made it possible to purchase these bonds for \$162,450 less than their redemption price at maturity. Following the policy pursued for several years past, all payments into sinking funds during the year have been treated as a part of our depreciation reserve, and were included in the revenue deductions made for that purpose.

CURRENT ASSETS AND LIABILITIES

The Company's business throughout the year was conducted on a cash basis, and as a result of the prompt payment of bills a saving of \$41,082 was effected by way of cash discounts. The cash balance in the Company's treasury at the close of 1921 was \$12,358,764, and its net working assets, \$16,630,414.



The Pit River Railroad in Winter. Reading from left to right, from the top down, these views show: (1) Encountering the first snow at Bartle. (2) Bucking drifts deeper than the height of the plow. (3) A cave-in; train backed up to enable the snow shovelers to work. (4) Battling the deep drifts above Bear Flat; looking over the tops of the four locomotives toward the almost submerged plow. (5) Looking backward from the rear of the train along the newly cut trench. (6) Plow off the track. (7) Victorious after an all day battle with the snow king.

Bucking the Snow on the Pit River Railroad

By H. S. FURLONG, Publicity Department.

Accompanied by Engineer Peterson and Assistant Engineer Keeling the writer recently journeyed toward the Pit country, arriving at the little town of Sisson in a driving March snowstorm. Sisson is the main line terminal of the McCloud River Railroad and is noted chiefly as the site of

one of the largest fish hatcheries in the State. Leaving a comfortable Pullman for the dubious warmth of a coach heated by a wood burning stove we rumbled out of the Sisson yards, the passenger coach leading the train, followed by several freight cars with the locomotive "pushing." The driving snow obliterated the landscape and, piling up on the front platform, forced itself through the cracks of the door into the interior of the car.

It is but an hour's ride to McCloud, where the sawmill and box factory of the McCloud River Lumber Company are located. Here the night was spent with the expectancy of leaving for the Pit the following morning. The cold grey twilight, however, disclosed two feet of new snow on the ground with still more falling. Also, word was received that the snow train with plow and four engines was stalled with one locomotive out of commission somewhere out in the tall timber in the vicinity of a certain Slagger Creek; so there was nothing to do but accept the hospitality of the Hotel McCloud till the way was clear. If the gentle reader has never spent an enforced sojourn at a country hotel he has little conception of the months of monotony that can be crowded into a few



A picturesque curve along the route. Mt. Shasta in the background.



The Bartle freight sheds.

days. One hour differs from its predecessor only to the extent that the next meal will be announced that much sooner. In McCloud, as in many other places, the three great events of the day are morning, noon and night. Due to the influenza, even the movies had been closed. We read everything readable, including the patent medicine advertisements in the local newspapers. There was a map hanging on the wall, portraying the sovereign State of California in all of some middle western lithographer's glory. It was a crude work and the vintage of many years past. From Del Norte to Imperial I studied that map, carefully noting the misspelled towns and the misplaced rivers. I carefully picked out and made mental note of all the towns I had visited. Then I seated myself and watched the hands of the clock creep around, only to return to the map for the further study of geography. That map helped wonderfully to pass the time.

Thus four long days and longer nights dragged themselves wearily along until, at last, on the morning of the fifth day the snow train was finally rescued from the wilds of Slagger Creek and everything was in readiness to cut our way through the drifts on the fifty mile run to Pit river.

The snow was again falling as the train left McCloud. Four locomotives behind a snow plow and pulling a caboose and "flanger" constituted the train. The "flanger" is a small car designed to remove the ice from the track. This is accomplished by means of two steel blades which are dropped into position, cutting the ice and snow for a distance of a few inches on the inner side of the

rails. These blades are controlled by an operator within a small cab mounted on the car. Extreme care must be exercised to raise the blades when switches and crossings are encountered, otherwise derailment would occur.

Approximately forty men crowded into the caboose. The writer was fortunate enough to secure a seat in the cupola from which an unobstructed view could be obtained in all directions.

The road from McCloud to Bartle had previously been broken through and the train rolled along at a good rate of speed. Bartle is the end of the McCloud River main line and from this point on, the operations are under the jurisdiction of our own train dispatcher. Clearance being obtained, we left Bartle behind and the four engines settled down to the real business of battling their way through the deep snow which completely obstructed the track. It was a novel experience to peer ahead through clouds of steam, smoke and falling snow and watch the deep drifts forced high up on the plow, only to be cast aside and hurled down the embankment which had piled up on each side of the right of way.

An up grade was encountered not far from Bartle and slowly we felt the speed of the train slacken, shudder and stop. Four long blasts from the whistle of the leading locomotive and we backed up for a quarter of a mile through a trench of snow higher than the cupola of the caboose. Then, with all the engines panting in synchronism, producing an almost deafening roar, we gathered speed and hurled our hundred tons of hot pulsating steel against the barrier. Before the ter-

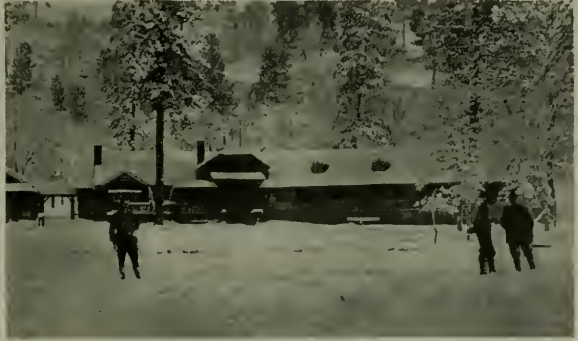


Terminus of the railroad at Pit One Camp

rible onslaught of this monster battering ram the enemy yielded and we gained a few hundred yards.

Backing and battering, pausing and forging ahead we fought our way foot by foot to the summit. Once the plow left the rails, buried under tons of drifted snow, and a half hour's hard work by the shovelers was required before we were under way again. From the summit we dropped down toward Bear Flat through canyons of frozen snow ten to fifteen feet deep, gradually decreasing in depth until at last only a foot or so lay on the ground as we arrived at Cayton Valley.

Here our train turned back to McCloud and the remainder of the journey was completed in one of the gasoline-operated track cars. It was a welcome change after



The clubhouse at Pit One after a night's snowfall.

the stuffy atmosphere of the caboose to ramble along at a fair rate of speed and enjoy the clean fresh air. We dropped down the long grade, and following along the bank of the foaming Pit arrived at camp just in time to hear the welcome sound of the dinner gong.



OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION

East Bay Presents "The Mikado"

On Thursday evening, March 16th, "The Mikado" was presented at the Oakland Civic Auditorium by East Bay Section under the auspices of the Gas House Terriers Athletic Club of Gas Station B. It was the largest and best thing of its kind ever attempted by the East Bay Section.

W. J. De Gloria as the Mikado enacted his part with all the dignity and majesty of a real ruler of the land of cherry blossoms. His dramatic ability, coupled with a melodious voice, resulted in a portrayal of the emperor equal to that of a professional.

The prettiest picture of the evening was without doubt that presented by the



A BIT OF OLD JAPAN
Cast of "The Mikado," presented by East Bay Section

All of the characters were well portrayed and the work of the entire company reflected great credit upon those responsible for the affair.

Leon Mills, as Nanki-Poo, had the audience with him all the time, and as for Pooh-Bah (which character by the way was sustained by an actor with an unpronounceable name, see program), he is the fellow we would all like to have around when in a tight place.

"Three Little Girls from School." As for Katisha, Thera Hamilton furnished as good a rendition of the part as could be desired. The girls of the chorus presented a pretty picture and sang well and the men got their songs over in good style. Last but not least we mention H. G. Preston, who as Ko-Ko, the unfortunate Lord High Executioner, gave a most excellent portrayal.

Following is the cast of characters:

The Mikado of Japan.....W. J. De Gloria
Nanki-Poo, his son.....Leon Mills
Ko-Ko, Lord High Executioner...H. G. Preston
Pooh-Bah, Lord High Everything Else

Pish-Tush, a Noble Lord, . . .	X. Y. Z. Archibald
Yum-Yum } Three Sisters, . . .	C. Walton La Rue
Pitti-Sing, } Wards of	Grace Buckingham
Peep-Bo. } of Ko-Ko	Violetta Buckingham
	Leona Calhoun
Katisha, Elderly Lady (in love with	
Nanki-Poo)	Thera Hamilton
Knee-Ban, Guard to Mikado. . .	A. E. Creswell

Those in the chorus were:

Sopranos: Theresa Commella, Margeret Frank, Mabel Garcia, Eloise Gibbs, Josephine Lind, Hazel Morrow, Lillian M. Preston.

Altos: Emma G. Burnham, Flora H. Dearmin, Evelyn Girard, Betty Larson, Jennie E. Leach, Adele Narinian, Madeline E. Silva, Irene Sweet.

Tenors: H. L. Godbier, K. W. Hawley, Dean Jackson, A. L. Moore, Harry Patton, E. L. Smith, J. W. Toole, R. Von der Heide.

Basses: W. L. Smith, H. W. Beekman, Phillip Assouza, A. E. Creswell, "Bill" Shuhaw, J. A. Smith.

Staff:

H. C. Day	Business Manager
H. G. Preston	Stage Director
Van E. Britton	Musical Director
K. Naismith	Stage Manager
Harold Mann	Property Man
B. E. Tyler	Prompter

H. F. F.

Pit Chapter's Musical Comedy a Success

On March 11 a play entitled "The Corner Drug Store" was enacted in the Pit One Club House with an attendance of about 200 people from Fall River Mills, McArthur and Pit One. The play was so successful that it has been decided to repeat it at Fall River Mills. The Pit One brass band of 14 pieces furnished the music for the play and the stringed orchestra with piano supplied plenty of fine music for the dance that followed.

Following is the cast:

Doolittle, proprietor of store	A. Jones
Tessie Trundlecart, cashier	Mrs. Lee
Peg Wallop, the police force	J. Dolan
Mrs. Whiten Black, a merry widow	

Mrs. Bert Martin

Lem Pillsbury, a chronic invalid . . . C. Perkinson
 Doc Pettingil, a "patient" man . . . O. C. Hackler
 Scraggins Plantem, an undertaker . . . R. Orr
 Cora and Seeda Apple, twins . . . Misses Graetz
 Muggs Murphy, not afraid to go home in
 the dark . . . B. Lee

Knutan Foxie, out for the money. K. Dyson
Bessie Buttercup, a sweet sweetheart. Mrs. Lowe
Buttonbenders, a wealthy Irishman . A. Phillips
Arabella Sunset, an old maid Mrs. Ramsey
Peter Pumppernickle, a German professor. B. Legg

G. C. L.

San Francisco Planning Theatre Party

Arrangements are progressing for San Francisco's annual theatre party which will take place at the Alcazar Theatre, Monday evening, May 1st, and the Social Activities Committee Chairman, Mr. J. L. Gilbert, promises it will be a big night. Tickets will be issued shortly. The play will be the farce comedy entitled "Twin Beds."

An Automobile Class of 75 men is now in session each Monday night at the garage at 5th and Mission Streets, where Eddie Wood combines business with pleasure in teaching the class how to make a balky automobile work when it doesn't feel like it. Classes in the steam and electrical courses are also in session at the Potrero and at Station A.

Members desiring further information or who wish to attend these classes may be accommodated by communicating with Mr. P. E. Chapman, or Assistant Secretary H. F. Flynn.

An Echo from the Snow Party

This letter, from the Traveling Passenger Agent in charge of the special train which carried the recent Sacramento-Drum Snow Party to Truckee speaks well for the personnel of our Association:

SOUTHERN PACIFIC COMPANY
(Pacific System)

Sacramento, Cal., March 15, 1922.

Mr. H. F. Flynn,
Pacific Gas and Electric Co.,
San Francisco.

Dear Sir:

A line to you relative to your recent special train to Truckee and return.

Desire to express to you my admiration of the members of your association who made up this party. They are a fine crowd individually and collectively and I always consider it a privilege to be assigned the duty of accompanying your special trains.

Hoping that I will again have the pleasure of accompanying one of your parties, I am,

Sincerely yours,

(Signed) J. J. COYLE,
Traveling Passenger Agent,
Southern Pacific Lines.



R.J. COURTIER



MEYER DAVIS



JAMES KINGSTON



TIMOTHY DUGGAN



JOHN FAHEY



JAMES BUCKLEY



FRANK CRAWFORD



TIMOTHY CURRAN



JOHN W. THOMAS

The "Pacific Service" pension roll. These portraits are of nine former employees whose long and faithful service has been rewarded with honorable retirement.

The "Pacific Service" Roll of Honor

Heading the honor roll of "Pacific Service" are 64 names of men whose long and faithful service to our company has been rewarded by their honorable retirement with provision for their declining years under our company's pension system, which underwent complete revision last fall.

In our two last issues we presented the portraits of eighteen of the oldest, in terms of service, of our company's pensioners, accompanied by their several service records. In doing this we were actuated by a desire to make our readers acquainted with these men and their records, and to point out what is generally recognized in all up-to-date business enterprise, namely, that long and faithful service shall have its just reward.

Opposite this will be found the third installment of nine portraits of men whose names are upon our company's pension roll. These are:

R. J. Courtier. 73 years of age, having been born May 10, 1848. Entered the service of the City Gas Company in March, 1871. Retired on pension January 1, 1917, at which time he was in the collection department of the San Francisco Division.

Meyer Davis. 71 years of age, having been born December 21, 1850. Entered the service of the San Francisco Gas Company in December 1873. At the time of retiring on pension, October 1, 1914, he was employed in the San Francisco Division.

James Kingston. 71 years of age, having been born in 1850. Entered the service of the San Francisco Gas Company in 1875 and at the time of retiring on pension, January 1, 1917, was night superintendent at the Potrero.

Timothy Dugan. 75 years of age, having been born July 27, 1846. Entered the service of the San Francisco Gas Light Company in 1875, retiring on a pension March 1, 1917, at which time he was employed at the Potrero.

John Fahey. 83 years of age, having been born in 1838. Entered the service of the San Francisco Gas and Electric

Company in 1883. At the time of retiring on a pension October 1, 1919, was employed at the Potrero.

James Buckley. 72 years of age, having been born November 5, 1849. Entered the service of the Central Gas Light Company in September 1881. At the time of retiring on pension, April 1, 1917, was in the gas distribution department of the San Francisco Division.

Frank Crawford. 67 years of age, having been born in November 11, 1854. Entered the service of the San Francisco Gas Light Company in November, 1884. At the time of retiring on pension, January 1, 1922, was gateman at the Potrero.

Timothy Curran. 64 years of age, having been born December 20, 1857. Entered the service of the San Francisco Gas Light Company in June, 1885. At the time of retiring on pension, April 1, 1918, was patrolman at the Potrero.

John W. Thomas. 69 years of age, having been born September 26, 1852. Entered the service of the Vallejo Gas Company in May, 1886, and retired on a pension June 1, 1919, at which time he was in the gas department of the Vallejo District.

The Mining Outlook in Tuolumne County

By J. A. VAN HARLINGEN, Editor *Sonora Union-Democrat*.
(Written especially for PACIFIC SERVICE MAGAZINE)

The early placer mines of California and the hydro-electric power developments of today are closely linked together in the pages of history. The redshirted miner of days gone by, laboring hard and long with pick, shovel and powder to bring the roaring mountain torrent from out its canyon, and through tortuous ditches and flumes guide it to where lay the gold bearing gravel of the Sierra, little dreamed of the untold wealth he was developing for an age he was destined never to see. Many a story of blighted hopes and broken lives lies at the bottom of an abandoned shaft or gaping tunnel, but of the miles of ditches dug to bring the water necessary for working the gold that often was never found, many were later utilized for generating an intangible energy more precious than gold.

Especially is this true in old Tuolumne, where were located some of the richest placer diggings the world has ever known. The great Stanislaus power development was planned to exploit a gravel mine that was never worked. The water now supplying the city of Sonora, and which operates the Phoenix power plant, is conveyed through some twenty-odd miles of ditch cut by those early miners to rob the Columbia basin of its treasure. And so the labor of the men of those other days was not in vain. The fruits of their toil help to light the streets and homes of great cities of which they never dreamed.

Many changes have transpired in old Tuolumne. In 1850 an army of gold-thirsty men swept over her hills and skimmed the surface of her soil for the cream of her treasure. Wealthy and triumphant or broken and dejected the mad army retreated. Then came the second period, the mining engineer, cool and calculating, systematically directing his efforts to the quartz body far beneath the surface, the mother lode from which the surface gold had been spawned. For many years Tuolumne's hills and canyons echoed to the ceaseless music of the falling stamps. Then gradually, one by one, the mills ceased to grind. Some of the mines "pinched out;" others, forming the vast majority, were forced to cease operations due to increased production costs. Other industries invaded the mountain country. With the railroad came the lumber mills, creating new interests and new occupations. But in the hearts of the sons and daughters of those sturdy pioneers Tuolumne's gold still is and always will be her dearest and most treasured possession. No music will ever be so sweet to their ears as the crashing roar of the thundering stamps, grinding the precious metal from her underground treasure vaults.

That locked in those vast treasure vaults is still untold wealth is a fact conceded by the leading mining men of today. So, it is pleasant to learn that, encouraged by falling prices of labor and material, a resumption of mining activities on an extensive scale is at hand on the mother lode, and "Pacific Service" has encouraged and, in some measure, made possible this resumption by the availability of a dependable and adequate supply of power at attractive rates. Mr. R. E. Fisher, our company's Vice-President in Charge of Sales, in a recent address made this announcement:

"Statistics compiled by the Pacific Gas & Electric Company show that during the year 1920 the average rate per kilowatt hour in the mining industry was 1.123 cents, while the average system rate for all classes of power during the same year was 2.068 cents."

In the following article Mr. J. A. Van Harlingen tells what the present and future hold for the mining industry in Tuolumne County—EDITOR PACIFIC SERVICE MAGAZINE.

Gold mining, except in isolated instances relegated to practical oblivion by the late war and conditions growing out of it, is being generally revived and bids once again to assume an important place in the industrial life of the West, and particularly in Tuolumne County, where the early exploitation of the placers yielded princely fortunes to the pioneers, and still later demonstrated that beneath the surface diggings lay a perfect network of gold-shotted ores, whose virgin beds have never to this day even been more than superficially explored.

There is scarcely an acre of ground in Tuolumne County in which gold has not been found when sought. Here we have

two great mineral belts, each miles wide, with a perfect triangle of rich veins stretching in all directions—a mazy, mighty mass of quartz and gold. Excepting for the wartime intermission, for over fifty years this sheet of precious metal has been dotted with miners, thousands of whom have hewn from nature's fabric almost countless wealth, though so little in comparison to that still locked in the slate and granite arms of old earth, that it in reality is but a bagatelle—a grain of sand in the desert—a breath in the atmosphere of all that lies between heaven and earth.

Twenty years ago 800 stamps were ringing out in chorus in the quartz mills

of Tuolumne County, when the gold output totaled \$1,900,000, credited to the various districts as follows: Big Oak Flat, \$200,000; Tuolumne, \$300,000; Jamestown, \$700,000; Sonora, \$400,000; Columbia, \$150,000; Chinese Camp, \$150,000. During the next decade there was some curtailment of the production, but it remained for the war to actually force an almost complete cessation of mining activity. The cost of mining supplies was almost prohibitive, but it was the loss of manpower, the drafting of the miners to fight that silenced the music of the stamps and caused our bullion production of from \$1,000,000 to \$2,000,000 annually to drop to less than \$200,000.

Gold mining, so unhappily interrupted, is coming back, and unmistakably stronger and better than ever before. It is true that most of the open air strikes—that is, where gold virtually sticks out of the ground in chunks—have ended. So has the day of the miner who could not discern a difference between a bonanza and a formation of dirty diorite and nasty mica schist. It is gratifying to note that in the rehabilitation of the gold mining industry in the Mother Lode section such eminent men as W. J. Loring, president of the American Mining Congress, is a leading spirit and a tremendous power in its restoration. It is a healthy sign that men of extensive practical experience and deep geological knowledge are largely at the helm in directing the rejuvenation of quartz mining.

It is a noteworthy fact that in the lethargic years of mining Mr. Loring was practically the only large operator on the Mother Lode and his activity and success with the Carson Hill Mine at Melones and the Plymouth in Amador County served to accelerate an awakening to the fact that these old mountains are still the treasure houses for untold wealth, and under the stimulation mines are being re-opened and new prospects developed through all the Mother Lode counties.

In Tuolumne County the resumption of quartz mining is apparent in almost all of its famous old camps.

In the Tuttletown district the Patterson Mine, with a bullion record of \$1,500,000 in the early quartz mining days, has been re-opened and equipped

for deep mining, and new developments have exposed ore bodies of great extent and richness.

Jackass Hill, adjacent to Tuttletown, famous alike for its gold production and as the early day home of Bret Harte and Mark Twain, with its dozen claims, has passed to the Chileno Gold Mining Company, which is headed by Governor Miller of Pennsylvania as president. It is a highly mineralized section and the holdings, which extend to the Stanislaus River, will be subjected to exhaustive exploitation. Shaft development on the Chileno Mine, one of the group, shows a fine body of ore. Claims in this group have an authentic output of over a million dollars, realized solely from being worked as "pocket" mines. Despite its great output there is probably no gold mining ground anywhere on earth so little developed as is Jackass Hill.

Running south along the mammoth ledge we have the Arbona, Alameda, Rappanock, Rawhide, Omega, Alabama, Crystalline, Mangante, Sweeney, Dutch and App Mines, many of which were heavy producers and some of which are being considered for purchase and re-opening.

The Santa Ysabel group, between Quartz and Stent, is being re-opened by William Watts Hurt, a mining man of world-wide experience, who feels that he is starting the old mine upon a long career of activity and great productivity. Adjoining these claims are the Jumper and Mazeppa groups of mines, but it is not known if any deals are pending for their transfer or if the owners contemplate early resumption of operations.

The Tarantula and Gold Ridge group of mines, covering an area of ground of proven value, and owned by a company headed by ex-Governor Henry T. Gage, will be opened in a few weeks.

The Eagle-Shawmut Mine, the biggest and deepest mine in the county, the last to quit under the unfavorable war conditions and the first to resume, is now being operated with a full quota of miners and mill men and the eighty stamps are in motion day and night.

Still farther south in the Jacksonville section, the Harriman, a mine of exceeding good promise, has resumed work. Along the whole Mother Lode on the side

lines, a number of properties are being profitably worked and others are being developed.

On the south side of the Tuolumne River much mining and prospecting work is being prosecuted. Near the apex of the Priest grade the National Mines Co. is exposing some good ore bodies. The Longfellow at Big Oak Flat, a sensational producer 25 years ago, is being re-opened and its magnificent large veins insure pleasing profits. Preliminary work is being done on a number of old claims in this section to admit of inspection by prospective purchasers.

On the East Belt the impetus is felt and a great deal of mining is being prosecuted, and a number of properties are scheduled for great development work in the near future. The Carlotta Mine at Cherokee is running full blast and making a good showing. The Old Black Oak Mine near Soulsbyville is in process of reorganization and is destined shortly to cover its mill plates with amalgam in profitable quantities as was its regular habit for years.

Parties are seeking the Horseshoe Bend Mine on the Tuolumne County side of the Stanislaus River, a few miles above Melones. The property bears all the earmarks of being a good mine.

On the northern end of the East Belt, in the Columbia District, the Contention Mine, on Grant's Ridge, above the Stanislaus Power Plant, is making a fine showing. All through that section much prospecting is going on, and the indications are that some good properties will be developed.

Among the bigger mining enterprises being conducted in the county is the working of the Big Bonanza pocket mine, situated in the heart of Sonora, and which has a verified output of at least \$2,000,000 to its credit. In the latter seventies the mine yielded \$500,000 in one week. The Golden Gate Mine, near Sonora, with a production of \$3,200,000 and only worked to a depth of 700 feet, is being re-opened. The ore, heavily sulphuretted, averages from \$12.00 to \$14.00 per ton.

In gravel mining the only extensive operation in the county is being conducted by the Springfield Tunnel & Development Company, which recently by means of a long tunnel tapped and drained an

ancient river channel whose rock formation caused a great underground ocean and whose waters precluded recovery of the rich gravel briefly exposed a decade ago. Sometime in February it is expected that the adit, which is over a mile long, will strike beneath the golden nuggets. A company is organizing at the present time to work five miles of the same ancient channel, several miles below the Springfield Company's gravel claims.

The noticeable activity in the mining field is verified by the locations, leases, agreements, bonds and deeds of mining property being recorded very frequently by County Recorder W. F. King. Interest in mining is further evidenced by the daily visitations of mining men and investors to the Tuolumne gold fields. Very few Tuolumne County mines have anything to fear from the truth, or even from falsehood, when sufficient time has elapsed for investigation. Our many claims require no lurid eulogy, no prejudiced examinations, no varnished tales of wealth. They have yielded prodigiously in the past to shallow working and they will again and again pour out a golden stream of wealth in response to deep mining operations.

The conditions for mining in Tuolumne County are ideal in most respects. Time was when it was otherwise and production was curtailed by lack of power, limiting the season of activity. This handicap has been forever removed. Maximum production at a minimum of cost for power is assured through the Pacific Gas & Electric Company, whose wires cover the mining belts, and which is prepared to give excellent service continuously. Most of the mines mentioned in this article are served by the company and all can and will be upon request. The assurance of steady power is one of the biggest items making for the success of a mining enterprise. As State Mineralogist Fletcher Hamilton says in a recent bulletin: "Development of our hydro-electric resources in California is nowhere more important than in the mining districts. Some of the leading large-unit installations are in close proximity to our important mineral regions. Electricity is destined to play an increasingly significant part in the economic development of our commonwealth and its natural resources."

The Financial Side of "Pacific Service"

Following is condensed approximate Income Account Statement for the first two months of 1922, compared with the same period last year:

CONSOLIDATED INCOME STATEMENT (Including operations of Mt. Shasta Power Corporation) TWO MONTHS ENDED FEBRUARY 28TH

	1922	1921	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$ 6,737,688.93	\$ 6,618,690.33	\$ 118,998.60	.....
Maintenance.....	461,816.81	522,115.00	.....	\$ 60,298.19
Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	3,617,087.17	3,657,097.62	.....	10,010.45
Total Expenses.....	\$ 4,078,903.98	\$ 4,179,212.62	.....	\$ 100,308.64
Net Income.....	2,658,784.95	2,439,477.71	\$ 219,307.24	.....
Net Interest Charges.....	859,166.91	818,562.57	40,604.34	.....
Balance.....	\$ 1,799,618.04	\$ 1,620,915.14	\$ 178,702.90	.....
Bond Discount and Expense.....	71,588.76	60,227.19	11,361.57	.....
Balance.....	\$ 1,728,029.28	\$ 1,560,687.95	\$ 167,341.33	.....
Reserve for Depreciation.....	590,443.03	511,512.95	78,930.08	.....
Balance to Surplus.....	\$ 1,137,586.25	\$ 1,049,175.00	\$ 88,411.25	.....
Dividends Accrued on Preferred Stock (6%).....	408,618.05	342,866.83	65,751.22	.....
Balance.....	\$ 728,968.20	\$ 706,308.17	\$ 22,660.03	.....
Dividends Accrued on Common Stock (5%).....	283,481.60	283,479.50	2.10	.....
Balance.....	\$ 445,486.60	\$ 422,828.67	\$ 22,657.93	.....

In the public utility business, growth of revenues is always accompanied by increased investment. During 1921 this Company's additional capital investments amounted to more than \$18,000,000. Adding the similar investments for the first two months of 1922 brings the total for the fourteen months covered by the above comparison of earnings to upwards of \$21,000,000.

At the close of 1921 the total stock and bond capitalization of the Pacific Gas and Electric Company, in round numbers amounting to \$188,000,000, represented the aggregate savings of approximately 50,000 investors, or at the average rate of a little less than \$3,800 per investor; and it is probably a fact that the financial statements of this Company have a wider and more direct appeal to a greater number of people who have contributed money to the enterprise, than those of any similar public utility in America.

Indicative of the wide-spread distribution of the ownership of the Company among people of moderate means is the fact that 9,831, or 52% of the total number of stockholders hold 10 shares or less, and 82% of the total number hold less than 50 shares, as shown by the following table:

STATEMENT OF STOCKHOLDERS

SHARES OWNED	NUMBER OF STOCKHOLDERS	PERCENT OF TOTAL
1 to 10 Shares.....	9,831	52%
11 to 49 Shares.....	5,696	30%
50 to 100 Shares.....	2,228	12%
100 or more Shares.....	1,059	6%
	18,814	100%

Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF THE
PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - - EDITOR-IN-CHIEF
FREDERICK S. MYRTLE - - - - - MANAGING EDITOR
A. F. HOCKENBEAMER - - - - - BUSINESS MANAGER

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at 445 Sutter Street, San Francisco

The Pacific Gas and Electric Company desires to serve its patrons in the best possible manner. Any consumer not satisfied with his service will confer a favor upon the management by taking the matter up with the district office.

VOL. XIII APRIL, 1922 No. 11

EDITORIAL

The present issue of PACIFIC SERVICE MAGAZINE contains as a leading feature an account of the annual meeting of our company's stockholders, which took place according to schedule on the second Tuesday of the present month. It is gratifying to note from the reports of both Mr. Britton and Mr. Hockenbeamer that not only is the record for 1921 a most commendable one from every point of view but that, also, there is every reason to expect that the fiscal year of 1922-23 will eclipse all others in the history of "Pacific Service."

Much was accomplished during the past year in the way of additions and improvements of service to our consumers. The great Pit river development of which great things are expected received a fair start with the completion of two preliminary water power plants on Hat Creek, and our engineers promise that by mid-summer of the present year the first of the large Pit river developments will have been put in operation.

No need to tell the readers of PACIFIC SERVICE MAGAZINE what this means to the people of north-central California and the various industries that make for the abiding prosperity of this section of the country. Our readers have been told of the wonders of the Pit region, of the abundant underground water storage of

the Modoc lava beds and the even flow of the streams that have their sources therein. At the time of writing, the snow lies deep upon the Sierra summits and indications point to full reservoirs throughout the system; but even if these conditions did not obtain, and even if another water shortage in the Sierra Nevada threatened as a result of insufficient precipitation during the winter that is past, the joining of the Pit river link to our chain of hydro-electric systems would go a long way toward insuring a sufficient supply of electric energy to turn the wheels of industry.

So, it is with light hearts that we set out on our new year of "Pacific Service" activity. That the future of public utilities was never so bright as it is today is the opinion widely expressed among leaders of public enterprise throughout the country. Mr. J. J. O'Brien, vice-president of H. M. Byllesby & Company, in a recent address declared: "We are feeling so optimistic about it that for the first time in seven years we are seeking new properties which measure up to our standard for acquirement. For the first time in years public utilities are making extensions and improvements of their properties beyond the actual immediate needs. The period of waiting is past and from the resumption of industrial activities so clearly indicated by improved conditions in the agricultural districts much new business is clamoring for connection."

Mr. O'Brien bases his diagnosis upon conditions not only in the East where he resides but in the great West where Byllesby & Company control more than one public utility. Elsewhere in this issue we quote a similar expression of opinion from our company's president, Mr. Creed, and now comes our vice-president and general manager, Mr. John A. Britton, fresh from a trip East during which he took in the cities of New York, Philadelphia, Washington, Cleveland and Chicago, with the statement that throughout the East he observed a most decided optimism concerning future business, particularly in our own industry. Money is apparently plentiful for public utility use. "The electrical industry is now universally recognized as a stable industry in every sense of the word," states Mr. Britton.

At the close of 1921 the Pacific Gas and Electric Company was owned by 18,814 shareholders. Indicative of the widespread distribution of the ownership of the Company among people of moderate means is the fact that 9,831, or 52 per cent of the total number of stockholders, hold 10 shares or less. The number of stockholders owning more than 10 shares, but less than 50 shares, was 5,696, or 30 per cent of the total. The number of stockholders owning more than 49 shares, but less than 100 shares, was 2,928 or 12 per cent. Only 1,059 stockholders, or 6 per cent of the total number, owned more than 100 shares.

Of the total number of stockholders, approximately 80 per cent live in California.

Tidings that men in charge of our company's affairs are receiving recognition in the several communities in which they reside continue to come in. It is with pleasure that we note that Mr. P. M. Downing, vice-president in charge of Electrical Construction and Operation, has been appointed Chairman of the Industrial Committee of the San Francisco Chamber of Commerce. Mr. Wigginton E. Creed, our Company's President, has been chosen to serve on the same committee. The Industrial Committee will give general directions in carrying out the work laid down by Dr. B. M. Rastall.

Word has also been received that at a recent meeting of the Chico Chamber of Commerce Mr. I. B. Adams, Manager of our De Sabla Division, was unanimously elected President of the Chamber.

Under the heading "Advertising 'Pacific Service'" in our issue of last month we outlined to our readers the campaign recently inaugurated to make our company and its activities generally known to the public through the medium of the press. It is with much gratification that we note that our policy in this regard has met with the approval of the California State Railroad Commission. In an open communication upon this subject Mr. Harley W. Brundige, President of the Commission, thus expressed his opinion:

"That utilities in certain fields do not have serious competition does not affect the proper use of advertising. Modern

advertising seeks to create new business, rather than to take business from a competitor. When advertising is reasonably and wisely used, measured by results obtained and is not of the political propaganda type, it is a legitimate operating expense, as by increasing the volume of business it results ultimately in reduced cost to consumers. It is not only legitimate on the part of the company but desirable from the standpoint of the rate-payers.

"In stimulating additional uses of electricity through effective advertising, the Pacific Gas and Electric Company by increasing volume decreases the cost to each consumer.

"Even if the direct cost of the advertising is reflected in the rates, the indirect savings are bound also to reflect themselves in the ultimate rates, and the final saving will be greater than the immediate cost."

IN MEMORIAM

RICHARD PHELAN
THOMAS CLASBY

It is with deep regret that we record the death, during the past month, of two more of our company's pensioners whose names and faithful records stand upon the "Pacific Service" roll of honor. They are:

Richard Phelan. 76 years of age, having been born January 1, 1846. Entered the service of the Pacific Gas Improvement Company in 1885. Retired on pension February 1, 1920, at which time he was employed in the warehouse of the San Francisco Supply District.

Thomas Clasby. 63 years of age, having been born on January 8, 1859. Entered the service of the California Electric Company in January, 1885, and retired on a pension March 1, 1918, at which time he was employed in the service department of the San Francisco Division.

"Pacific Service" in the Pages of History--Mission San Jose

By GEORGE DONOVAN, Agent, Niles.

The story of Alameda County is full of historic romance, with its beginnings in the east end, near Niles, where for a period of some sixty years it is a story of a mission, Mission San Jose. Here in a beautiful peaceful valley, where nature lavishes all man could wish, religion came to civilize and subdue. It is a story of patience and endurance; romance and adventure.

The Mission was founded June 11, 1797. Padres Ysidro Barcenilla and Augustine Merino were placed in charge. An immense task lay before them. It was their duty to Christianize the thousands of Indians scattered along the streams on the bay shores and in the mountains behind. Further, they must make willing workers of their converts, and through their labors erect the buildings and the church that were to be Mission San Jose. The traveler, Langsdorff, writing in 1806 says of Mission San Jose:

"Although it is only eight years since the buildings were begun, they are already of considerable extent—the fruit trees are

still very young, but their produce is as good as could be expected. The Mission will in a few years be the richest and best in California."

In 1809 the Mission church was completed; a large cool, homely, but well-built structure. The padres had overcome the great difficulty which had confronted them in not having any large timber anywhere near the Mission. It is told of them that they had about one thousand willing converts and these workers were marched to Redwood Canyon, near Oakland, and there in the virgin redwoods cut the timbers for the Mission. More than five hundred timbers were used in the buildings; these were all hand hewn. The timbers were ten inches square and twenty-four feet long. To convey them from Redwood Canyon to the Mission was a big task, but they did it. There were but two padres in charge of the Mission at a time, and with the help of ten soldiers to preserve order the Indians in their domain were converted and taught industry and thrift.



The old Mission San Jose as it appeared in 1850.



The restored Mission San Jose. Picture taken July, 1921.

In 1834, under Padres Ouvan and Fortuny, Mission San Jose reached its greatest prosperity. The Mission then numbered 2,300 Indian neophytes, and the property listed 24,000 cattle, 1,900 sheep and goats and 1,500 hogs; also 25,000 bushels of wheat. An inventory of Mission San Jose at this period, after all debts were paid, showed values amounting to \$155,000, with horses worth \$10 and cows \$5 apiece.

During all of the period from the founding of the Mission to 1840, the Indians, or neophytes, were absolutely under the control of the padres. They had increased in numbers as the wealth and importance of the Mission increased. The life they led was an ideal one for them. They were generously fed, meat being the main part of their food. They were well cared for, because the padres acted as surgeons and physicians as well as spiritual guides. The married neophytes lived in their rancherias, or rows of huts, close to the Mission; the unmarried ones and young widows in quarters within the Mission. They were all locked in at night. When the bell was rung in the morning the married Indians appeared at the Mission and the unmarried ones were let out of the quarters. They were then carefully counted and made to attend prayers at the church. Then the work of the day commenced. A day's work was five or six hours in winter and seven in summer.

The padres were skilled in many lines and taught the Indians many of the arts of civilization. They manufactured at Mission San Jose woolen serapes, saddles, bridles, boots, shoes and soaps. Under Padre Duran this Mission was noted for the really fine violins which were made by the Indians. Trading vessels bought up all this output to be sold in the large cities of Europe. An early writer states that the best soap he could buy in Berlin and Vienna was made at Mission San Jose.

By 1830 the entire part of what is now Alameda County was divided among the aristocratic Spanish families and whose names are familiar to everyone. The first grants were the lands adjacent to the Mission lands. The most desirable lands were those nearest the Mission and the least wanted were those of Oakland, which were granted to a man named Peralta. All points on the east side of the bay pointed to and ended at Mission San Jose. Oakland was known as one of the several embarcaderos for the Mission, and those living in Oakland considered it a treat to be able to visit the Mission.

The Mission was a busy and bustling place of industry, with a religious atmosphere pervading everything. A volume could be written on the romance of it all. In fiesta times, such as Easter, Holy Week, Christmas, the place was a riot of color and action. Then came the Peraltas from San Antonio, the Estudillos from

San Leandro, the Pachecos from Alvarado, the Vallejos from Niles, the Hiergueras from Warm Springs, the Amadors from Sunol, the Bernal's from over by Pleasanton. A huge two-wheeled cart, called a calesa or "volante" was the means of traveling. It took several days to make the trip for some, but there were no hardships to endure. Overnight was spent at whatever rancho they were passing; and all were welcome.

The fiesta always ended with games and dancing, and the old street through the town has seen many a spectacle of surpassing beauty. It has witnessed youth in the gay fandango, the cavalier in the bull fight or horse race, and the picturesque Dons gathered to worship as their fathers had before them.

By 1840 Mission San Jose had lost most of its prestige. There were not more than five hundred Indians left. The secularization of the Missions had been going on for several years, and in every case it meant the destruction of the Mission and the utter demoralization of the Indians. In the unsettled state of affairs, during the American occupation, John C. Fremont had active control of its affairs. He and his troopers were at the Mission many times. He had a genuine fondness for the place and it was through him that Don Jesus Jose Vallejo was appointed major-domo of what was left.

The Mission and its seven thousand acres of land were sold in 1849 to Andreas Pico, who, in turn, sold it to E. L. Beard for \$12,000. Mr. Beard and his family lived in the Mission buildings. He began farming on an extensive scale and had use for all of the quarters that had sheltered the padres and the hundreds of Mission followers.

During the gold rush of 1849 and for several years after, Mission San Jose took on a new life; different from the days of the padres, but fully as romantic and picturesque. During these days of great excitement the town became a roaring and bustling mining town. The

last bull fight took place in the streets in 1850 and there were more American spectators than natives.

In 1847 the bark "Brooklyn" sailed into San Francisco Bay with many men who afterward became prominent in California history. Quite a number of these men found their way to Mission San Jose and squatted on the Mission lands. H. C. Smith was one who settled in the town and became a scout for Fremont. During the gold boom Smith had a hotel in the town. The story goes that he cleaned up so much gold dust that he had to have a wagon haul it to San Francisco. After 1850 the pioneers began settling thick and fast on the lands. These newcomers attended the dances and doings in the town. Here they danced and enjoyed themselves by candlelight and oil lamps, and now their sons and grandsons drive along smooth highways in high-powered cars to dances where electric lights turn night into day.

After the gold rush died out there was practically nothing left of the old Mission town. The earthquake of 1868 threw down the church, and a plain wooden one took its place. There was nothing left but the monastery and it became almost a complete ruin. Several years ago the Native Sons and Daughters of Alameda County took up the problem of restoring what was left; \$6,500 was raised, which was spent in preserving the old building. Mr. W. W. Shuhaw, of "Pacific Service," was treasurer.

The Pacific Gas and Electric Company tower lines today pass over the lands where thousands of Mission cattle roamed. The street of the town which passed out into the Camino Real is now the State Highway, and following it are the power lines radiating here, there, and everywhere unto home, farm, and orchard, where live the descendants of the pioneers. But through all of these lands, sad to relate, there are no descendants of the Spanish Dons. They, like the Missions, are of the past, gone forever.



Tidings From Territorial Divisions

East Bay Division

One naturally thinks of Berkeley as an educational center and a place of beautiful homes, rather than a city of manufacturing and industry. This city, however, has a dual personality. A portion of it is the educational center of the West and the University is surrounded by wonderful homes; but the district known as West Berkeley is a manufacturing and shipping center with great possibilities of industrial development for the future.

One of the really big industrial and manufacturing concerns of California and the West is the California Corrugated Culvert Company with general offices and plant at Fifth and Parker Streets in West Berkeley. From a small corrugated steel shop, this plant has grown in fourteen years to be one of the leading manufacturing establishments of the West for corrugated ingot iron products.

In 1908 G. H. Force and his two sons, H. W. Force, now president of the company, and R. C. Force, formed a partnership and purchased the small corrugated steel shop on the present site of the huge plant. With the purchase, the new company acquired the right to manufacture products from American Ingot Iron under patents covered by the Trademark Armco, which means iron that is as nearly pure as it is possible to produce and containing not more than one-sixth of one per cent of substances other than iron. The important and vital feature of the product is that it is rust resisting and very durable.

The growth of the business has resulted in the expansion of the plant from a building 40 by 60 feet to the present one covering approximately two acres. The general offices are now larger than the entire original establishment. A factory branch has been established in Los Angeles and the average number of employees has increased to approximately eighty. The most modern machinery has been installed and the plant has come to

be a model for firms manufacturing corrugated iron specialties.

The California Corrugated Culvert Company manufactures culverts for highways and railroads, storage tanks, drainage gates, flumes for power companies, irrigation and mining, farm products such as metal grain bins, and troughs and tanks for feeding and watering animals, also gates and dams for irrigation. In addition, this company publishes two magazines. One is called the *Highway Magazine*, and is intended to interest road builders, the other is named *Pacific Farm Progress*, and goes to about seventy thousand farmers throughout California.

Hayward is pleasantly situated on the western border of the Contra Costa hills in Alameda County, overlooking one of the most beautiful and fertile valleys in California. The bay of San Francisco lies about four miles west of the town while to the east are Castro Valley and Dublin Pass, gateway to the great interior valleys of California.

The town takes its name from its first American settler, William Hayward, who pitched his tent near the site of the hotel that now bears his name, in the year 1851. Hayward engaged in trade, farming, and later engaged in the hotel business. In the 60's and 70's the Hotel Hayward became famous throughout the bay region. The land on which Hayward settled was a part of the Rancho San Lorenzo, containing 27,000 acres owned by Guillermo Castro, who held it under a grant from Mexico. The town was first incorporated on March 11th, 1876, and at that time boasted a population of about 1,000 people.

Hayward now is the center of a very thickly populated community, but owing to its restricted boundaries, being less than one square mile in extent, it is credited with a population of but 4,000, while as a matter of fact it is the trading center of between 12,000 and 15,000.

At one time the fertile lands of the surrounding country were held in large tracts and were devoted almost ex-

clusively to the raising of cereals. Now the growing of grain has been largely superseded by vegetable and berry farms, orchards and poultry yards. The warm foothill region produces large quantities of early vegetables which are marketed in the bay cities. Some of the vegetables produced in large quantities are market and canning peas, tomatoes, cucumbers, rhubarb, cauliflower, potatoes, green corn and sugar beets. Fruit raising has long been a leading and profitable industry. Apricots, pears, cherries and plums are the leading fruits produced, but all varieties of deciduous fruits do well here.

Poultry has recently become a leading industry of the Hayward district. There are about one thousand poultry farms, the income from the eggs and poultry produced amounting to over \$5,000,000 per year. Hayward is also acknowledged to be the largest pigeon center of the United States, and King's lofts are the largest in the country. Besides squab raising, which has proven to be a very profitable industry, pigeons for breeding purposes are shipped from here to all parts of the world.

The manufacturing industries center about three leading plants. First, the Hunt Bros. cannery, one of the largest in the State, employing from 1,000 to 1,200 people during the busy season, has a weekly pay roll of over \$20,000. Hunt's "Quality Fruits" are well known throughout the United States and Europe. The industry second in importance is the California Conserving Co., the largest pickle factory west of Pittsburg. This institution pays from \$15,000 to \$20,000 per month in wages and distributes about \$2,000,000 per year to the farmers for raw materials.

The Luthy Battery Co., the newest large factory, employs over 100 men throughout the year. Its pay roll exceeds \$11,000 per month, and its output is from 35,000 to 40,000 batteries per year.

Hayward's three creameries do an annual business in excess of half a million dollars. Several smaller factories provide for local needs of the community.

Hayward owns its own water system, a public park of 31 acres, a public library and a \$150,000 high school. The primary and grammar schools, with 1,500 pupils

enrolled, are housed in five school buildings with a teaching force of forty men and women. Recently a bond issue of \$180,000 was voted for additional school sites and three new school buildings.

Three banks take care of Hayward's financial needs. Hayward has an active Chamber of Commerce of 300 members.

Hayward has a very efficient health center, employing two public nurses and expending over \$500 a month in health work.

Hayward possesses all the advantages of location, soil, climate and marketing conditions that are bound to insure its future growth. Its location on the Lincoln highway and at the junction of the Coast and Valley highways leading to southern California causes thousands of automobiles to pass through its streets daily.

Marketing facilities for Hayward's products are unsurpassed. Fruits and vegetables, dairy and poultry produce may be marketed and consumed in the bay cities the day they are gathered. Many residents of Hayward do business in the cities of Oakland and San Francisco, which may be reached by street car or automobile in from thirty minutes to one hour.

No city in the great State of California offers more inducement to home seekers in location, climate and fertility of the soil than Hayward.

The new Berkeley High School building program carried with it an elaborate electrical installation, and in order to better serve the various units and to make a more sightly piece of work, the transformers used were set in a specially built underground pit at the corner of Milvia and Kittredge Streets.

The result of this work is best expressed in the following:

BERKELEY PUBLIC SCHOOLS

Berkeley, Cal.

February 21, 1922.

Mr. John Pape,
Mgr. Pacific Gas & Electric Co.,
Berkeley, California.

Dear Mr. Pape:

At the meeting of the Board of Education February 14th, I was instructed to commend you personally and also the

Berkeley branch of the Pacific Gas & Electric Company for the excellent piece of work which has just been completed in connection with the installation of the electrical transformer in order to provide proper service for the new high school building. The Board was unanimous in its appreciation of this work.

Very sincerely yours,

(Signed) CLYDE BLANCHARD,
Acting Secretary.

An apparently inexhaustible underground supply of water under the town of Irvington has been discovered. The discovery may lead to the irrigation of the Irvington farming territory, it is announced. The discovery of the water stratum was made when a large pump was installed on the Reid Brothers' property here. After the pump had been in operation for some time it was found that despite the large amount of water it had taken out the water level had not been lowered. Well experts say that this is a sign that a hitherto undiscovered water supply has been tapped.

The Galena Signal Oil Company of Franklin, Pa., will soon begin work on their four-acre plant situated near the Standard Oil Company, at Richmond, which will cost more than half a million dollars.

The Galena Company manufacture a high grade oil, used by railroads for their rolling stock. The western demands for this oil has required shipments from the East. With the construction of a plant here the Galena Company will supply this demand from the new refinery.

Not only does a most prosperous industrial year loom for the East Bay Division, but reports from the various farmers and orchardists show that the brightest prospects in the agricultural line are in sight in every community. Nothing could have been better for fruit bearing trees than the fortnight's cold spell of January. The warm, gentle rains which followed gave the young buds a fine start, and the trees today show more abundant blossoms than usual.

Rhubarb crops in the San Leandro, San Lorenzo and Ashland districts are coming

in rapidly, and not only is the crop large but the rhubarb is the best produced in many years. Cherry and apricot orchards are in prime condition. Experts claim that the cold snap killed many of the pests. Cherry blossoms are unusually full and fragrant. Apricot buds promise a fine growth. Market conditions for both are better this year than at this time last year.

The Alvarado and Mt. Eden districts are placing great hopes upon the cauliflower crop. Every head of cauliflower that can be raised is sold, the demand from eastern markets being so heavy this year that a much greater quantity than produced could have been shipped. One firm which ships heavily from this district supplies the big trans-Atlantic liners, whose exacting diners give much praise to California's products. The potato crop here is also heavy. Mt. Eden is also looking forward to an unusually heavy crop of strawberries this year, as they yielded richly last season. Sugar beets, grain, and early vegetables are planted this year in greater acreage by about 25 per cent than in the heaviest previous season. Many tomatoes, too, are growing in the southern part of the district.

Centerville found last season that the soil and climatic conditions were especially adapted to the raising of superior tomatoes. This, added to the fact that scientific packing methods enable producers to pick the tomatoes green, allow them to ripen in transit and go upon the eastern markets just as they are ripe, has brought Centerville tomatoes into great favor in the east, especially in Chicago, and the great central west. Chicago exchanges stand ready to buy every tomato that can be produced in the Centerville district, as a consequence of which a 50 per cent increase in the tomato acreage is being planted in tomatoes in the Centerville neighborhood.

Irvington is a region of diversified crops. Peas, string beans, cauliflower, grains and much fruit will come from Irvington this year.

Niles is rejoicing in the outlook of orchard, field and truck garden. Almond, cherry and apricot trees, earliest in the East Bay district, are blossoming profusely. Few early crops were blighted by the January cold snap, and indications

certainly point to bumper harvests in every line.

Hayward is situated in the midst of one of the richest sections of the State. Potatoes, early peas, string beans, grains, alfalfa and orchards are vying with one another in the prospects of a heavy yield. Hayward is the headquarters for the farm bureau, which is staging a far-reaching program both in aiding farmers to increase production and, also, to conquer some of the pests which appeared last year. Indications at this time show that if the fine start obtained receives no serious setback the Hayward district will, as usual, prove to be one of the leading agricultural producers in the State.

Stretching from Hayward to Pleasanton are farms, vineyards, dairies, orchards and pastures. Upon every hand the signs show that this is to be one of the most hopeful, cheerful springs that the East Bay Division has ever known.

J. C. J.

The excavation and pile driving for the foundation of No. 9 gas holder was completed on March 30th, with a total of 2,800 wooden piles in place, averaging 20 feet in length. The concrete and steel work is now under way.

Recently our company arranged for the service of Mr. J. S. Gavin, of the United States Bureau of Mines, to instruct in "first aid." It was one of the most instructive courses in this line of work that has ever been given, and too much cannot be said for the splendid manner in which Mr. Gavin imparted his information. The beneficial results will certainly become apparent as time goes on and immediate skilled action becomes necessary to aid injured men in the field. We would all welcome a return visit from Mr. Gavin.

Work is under way for the construction of four new 30-foot wooden purifiers to replace the four original wooden boxes erected nineteen years ago, which are to be abandoned. These original boxes are located in the compressor yard at First and Grove Streets, and the 20-inch main supplying them is to be used for the transmission of gas from Station "B" to the dispatching system located at First and Jefferson Streets.

Fresno Division

A year or so ago Fresno, the mid-state raisin metropolis, awoke one morning to find herself heralded as the most progressive and prosperous city in the United States. This conclusion was based on a statistical report compiled by Roger Babson and Fresno was justly proud, with the press of the country using its good ink to spread broadcast her claim to distinction. But, we all know that it is one task to make a record and another to maintain it.

Fresno is not resting on her laurels but, like a city inspired, continues to plan and forge ahead, and "Pacific Service" keeps pace. Real estate tracts are opened successfully, despite the rumor of financial depression, with the new residential sections clamoring for gas service as an asset, and already miles and miles of gas mains are paralleling the path of progress.

We in this southern division sincerely believe that Pacific Gas with its quick efficiency along lines of service to the community, has been one of the potent factors in making possible the city's remarkable growth. So it is the determination of the Fresno branch of the P. G. & E. to give the city A-1 gas service, aid her in her enterprises and in the all-engrossing work of expanding and progressing, realizing that such co-operation means mutual success.

The popularity of gas for fuel is borne out by the following letter recently received from Mr. J. F. Hayhurst of 405 North Broadway, who installed two gas fired floor furnaces during the early part of the winter.

Mar. 6, 1922.

Pacific Gas & Elec. Co.,
Fresno, Calif.

Gentlemen:

We installed two floor furnaces some time ago. We use gas for cooking, hot water and heating purposes. The average expense for the past three months has been near \$14.00 per month. The results have been very satisfactory, the expense

being less than 50% for last winter. It is much cleaner, less trouble, and very satisfactory in every way.

Yours very truly,

J. F. HAYHURST,

405 Coast Avenue,

Fresno.

C. W. K.

❖

San Joaquin Division

Great progress is reported on the construction of the Don Pedro dam, located on the Tuolumne River about seven miles upstream from the town of La Grange. The dam, which will have a height of 285 feet, is one of the largest in the world and will have a storage capacity of some 280,000 acre feet of water. The reservoir will prolong the irrigation season by two months in the Turlock and Modesto Irrigation Districts, justifying the huge expenditure necessary to complete the big job. The primary purpose of the storing of this water is to prolong the irrigation season, but a power house of 15,000 KW capacity will also be built. The final disposal of the power to be generated has not yet been decided. Some 250 men are employed at present, working two shifts, and pouring over 700 cubic yards of concrete each day.

After being closed for eighteen months on account of lack of orders, the Stockton Glass Works has reopened and will operate until July 1st. The opening of this plant will furnish employment to 150 workers with a pay roll of \$6,000.00 per month. During the season 45,000 cases of glass will be manufactured.

That the mining industry in Tuolumne County has again come into its own is attested by the number of power contracts being signed in that district, and though the gold production in Tuolumne County is still below normal, the prospects for future production are indeed bright.

Extensive planting of all fruits is going on in the Stockton district this year, according to the County Horticultural Commissioner. The subdivision of land in the adjoining counties is held responsible for this activity.

The Board of Trustees of the city of Newman has recently awarded a \$180,000 paving contract to the Warren Construction Company for the paving of eighteen city blocks in that city. Improvements of this character result in a bigger and better community.

The Modesto Irrigation District has recently signed power contracts for five pumping plants aggregating a total of 75 horsepower. Four of these plants will pump water directly into the distribution canals and the fifth plant is of an experimental nature in that an attempt will be made by the use of this pump to lower the water table in the vicinity in which it is to be used. With the greater application of irrigation upon the land each year the level of the sub-surface water has gradually been raised until now a once ideal gravity irrigation system must fall back upon electric service to reclaim the lowlands. The same conditions obtain in other irrigation projects in this vicinity.

Recent weeks have seen much activity in the exchange of choice downtown business property in the city of Stockton. One prominent corner has been sold for a price in the neighborhood of half a million dollars, the Commercial and Savings Bank being the purchaser. Some of this property has been resold by the bank. However, a part of it is to be kept and used for future enlargements.

Another desirable downtown corner recently changed hands at a figure approaching \$100,000.00.

A comparative statement of the building activities in Modesto indicates a steady return to normal conditions. In February 33 permits were issued, representing work costing close to \$100,000.00, and for the first 15 days in March 27 permits were issued for buildings costing \$60,000.00.

Modesto's new slogan is "30,000 population by 1925. Let's go!"

S. J. D.

❖

Colgate Division

Building in the Colgate Division has taken a boom with the coming of the new year. In a short time Maxwell's new

\$60,000 high school will be completed, Arbuckle will soon let bids for a \$70,000 grammar school, and prospects are bright for a new grammar school in Williams.

Contracts have been let for seven bungalows to be built on a new street in Arbuckle near the site of the new grammar school. This district is one of the most promising in the town and in a short time will be planted in ornamental shade trees.

Marysville boasts of a new hotel and a new apartment house, besides several bungalows and dwellings of other description. Plans are under way for the erection there of one of the most modern hotels in the Sacramento Valley.

This season has beaten all others for the record of peach tree planting, as already there have been received in the county sufficient trees to plant 2,209 acres and still more are coming in. A portion of the planting has already been done and the balance will be put in as soon as the ground is in condition. The following is the record as kept at the office of the County Horticultural Commissioner for February inspection and planting:

Total Cling peach trees planted	87,293
Total acres peach trees	873
Total acres all fruits planted	1,246
Acres cling peach trees planted during December 1921, January and February, 1922	2,209

All indications point to the striking of oil west of Williams in paying quantity in a very short time. Everyone in connection with the wells is very optimistic and predicts nothing less than a gusher when oil is struck.

E. C. J.

North Bay Division

The prosperity of the town of Larkspur, Marin County, is greatly reflected in the amount of building permits issued for the month of February, 1922. The comparison with Sacramento for the same month is Sacramento, \$48,000; Larkspur, \$47,000.

The town of Corte Madera will soon be connected to our distribution mains, in-

creasing our number of gas consumers in that territory by 200. A demonstration of the use of gas appliances was carried on for ten days and received the interest and attendance of the community.

The Christian Science Church of San Rafael recently installed an electric steam heating system after trying several other systems that could not meet their requirements for a continuous even heat. The installation was made by the Herrod Electric Co. of San Anselmo, and consists of:

Eight 3,300-watt heaters.

Three 2,000 watt heaters.

Two 6,400-watt heaters.

The total load of the complete installation is 37,680 watts.

It is very seldom that requisitions come through in the North Bay Division charging out material used on lines broken down by the weight of snow. This was the situation at Mill Valley during our last snow storm.

The progress of Santa Rosa and vicinity during the past three years has been marked by many departures from the conservative. By the vastly increased building operations, which the merchants and optimistic builders of homes have carried on, the circulation of money has been more ready. New industries have sprung up and flourished and the old established firms have become more substantial.

In no way is the progressive spirit better reflected than by the rapidly increasing demand for greater gas service. At the present time "Pacific Service" at Santa Rosa is making and distributing approximately 100 per cent more gas than during the like period last year. Such increased demand for service could be met only by augmented facilities and modern equipment. The management, ever alert to the situation, has met the requirements and at this time we are enabled to announce the completion of extensive additions to our plant.

Most important among these is the new generator just put into operation with an output capacity of thirty to thirty-five thousand feet per hour. An additional Wilbraham Green exhaustor

has also been installed, which greatly increases the efficiency of the plant and reduces to a minimum the liability of interrupted service.

We believe that good equipment, supported by the willingness and determination of employees to make "Pacific Service" as near as humanly possible perfect service, will accomplish that purpose.

H. G. R.

West Side Division

The town of Willows is apparently coming out from under the period of depression that has hung over it for the last year and there is now considerable business and building activity.

Hochheimer & Company have recently commenced work on reconstruction of their building that was destroyed by fire over a year ago. This building is to be occupied by Ellis J. Levy & Company on the main floor with business offices on the upper floor.

The Associated Oil Company has applied for a permit to erect a service station at the corner of Tehama and Walnut Streets. This building is to be modern in every detail and built along the very latest lines of architecture. It is to be a steel structure throughout and will cost \$8,000.

The Shell Oil Company is locating a plant along the highway at the edge of town, at which place they will also erect a service station for the accommodation of the traveling public. It is reported that another one of their attractive service stations will be located in the center of town.

The water works property at Willows, upon which is located the electric substation, gas works and water works, has changed wonderfully in the last month or so due to the great amount of rebuilding and repairing that has been done. In addition to the new electric substation that is being built both the gas and water departments have been doing considerable rebuilding.

In the gas department new lamp black separators have been built, a new blast pipe and stack have been put on the gas machine and two new 60 horsepower boilers have been installed. The old boilers that were put in by the Willows Water

& Light Co. about 40 years ago have been removed and the space formerly occupied by them has been turned into a warehouse. Steel frame generator and boiler room buildings have been built. The water department has finished the erection of a 100,000 gallon steel water tower and tank and is drilling a new well.

All permanent buildings are being painted with the company's standard colors, as well as the gasholder and compression tanks. The gas plant building has been repainted and as a whole the entire yard takes on a different appearance. We have received many favorable comments on the better appearance of the property. The company's trade mark is to be painted on the new water tank. This is only a forerunner of the appearance that it will make when entirely completed, at which time we will all be very proud of our plant.

R. W. M.

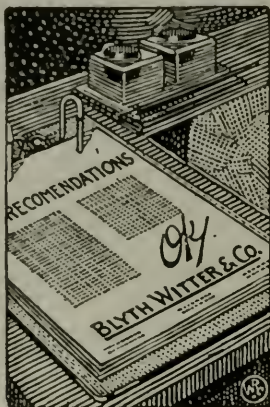
San Jose Division

On the 16th of March a gathering of San Jose Division men was held in the banquet room of the Hotel Vendome, San Jose, nearly fifty attending, the personnel being representative of all branches of the service. The meeting, which followed a supper, served a dual purpose, being educational and instructive in scope while affording also an opportunity to welcome into the fold Mr. Henry H. Buell, who returns to the San Jose Division after two years leave of absence in Washington, D. C., where he was engaged in engineering work for the U. S. Bureau of Standards. A great deal of his work had to do with safety code matters. Mr. Buell takes the position of engineer of electrical distribution in the San Jose Division, the position being formerly held by Mr. A. G. Ramstad, who retires after nearly fifteen years of service to engage in a commercial enterprise.

Mr. Kuster presided over the meeting.

Mr. Buell modestly told of his work in Washington with the Bureau of Standards, and with pardonable pride emphasized the fact that he was exceedingly happy to be again associated with "Pacific Service."

J. D. K.



The stamp of Approval

THE only bond buyer who can afford to make a really thorough, first hand investigation of a bond is the bond house that originally buys the issue for resale to its clients.

The individual investor must rely upon the "underwriting house" to establish the permanent safety and investment merit of the bonds he buys. Indeed, to him that is the primary function of the bond house.

The clients of Blyth, Witter & Co. have come to place a fine faith in the integrity and conservatism of our underwritings. They know that every bond we sell must measure up to high standards of safe investment—for otherwise, we would not recommend it.

Perhaps you have funds now waiting for investment. If you are of a conservative turn of mind on such matters, you will find the bonds we sell to be good bonds for you to buy. An inquiry places you under no obligation.

BLYTH, WITTER & Co.

MERCHANTS EXCHANGE

SAN FRANCISCO

OAKLAND OFFICE: EASTON BUILDING

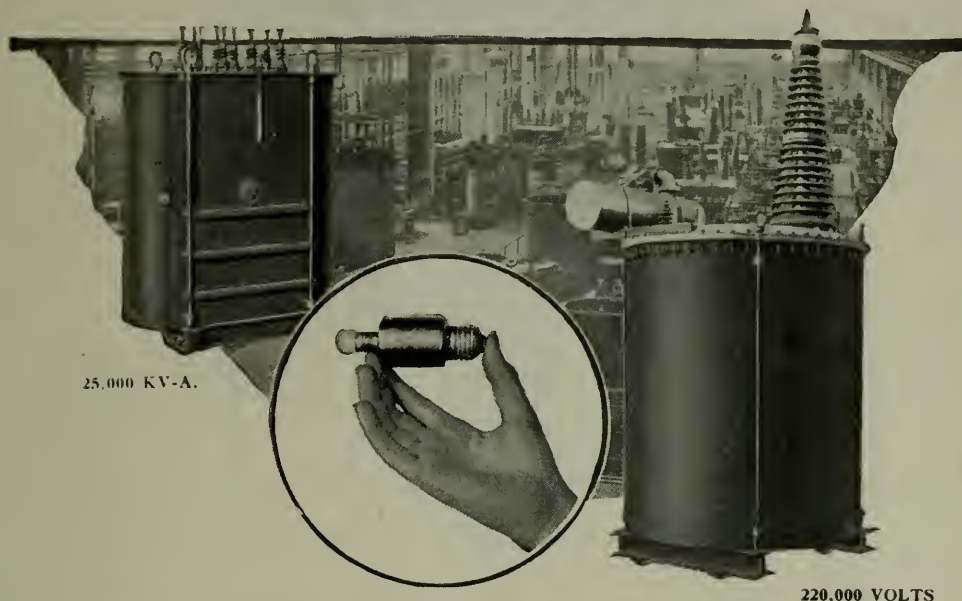
New York

Seattle

Portland

Los Angeles

The Importance of Transformers to Electrical Development is so great that there must be an absolutely reliable type made for every one of a wide variety of uses



You Can Rely on Them From Toy Size to Giant

Transformers must be absolutely reliable. Their functions are too important to permit of anything less. That is why there has always been centered upon G-E Transformer design and construction the most intense concentration of engineers and highly skilled craftsmen.

This concentration has produced transformers of the widest variety from the miniature in the All-Nite-Lite to the new 220,000-volt giants to serve a Pacific Coast transmission line. And it has produced apparatus which meets every requirement of every application whether it be for operating toys and ringing door bells from house lighting circuits, for delivering proper voltages at homes and industrial plants, for controlling high potentials at great hydro-electric power stations, or for handling large energies concentrated in a single unit such as the 25,000-kv-a. units on the Detroit Edison system.

Carry your transformer problem to the nearest G-E Sales Office.

General  Electric
General Office **Company** Sales Offices in
Schenectady, N.Y. all large cities

When writing please mention PACIFIC SERVICE MAGAZINE



TO carry on hydro-electric development in California last year \$36,500,000 bonds were sold to individual investors. Of this total E. H. Rollins & Sons participated in the original underwriting of \$26,500,000, or more than 72%. The Pacific Gas & Electric Company \$10,000,000 First & Refunding Mortgage non-callable 6% bonds were among these issues, in the underwriting and sale of which this investment bond house served both its clients and the State.

J. W. KERR, President

Established 1869

C. D. STEIGER, Secretary

Steiger & Kerr Stove & Foundry Co.

OCCIDENTAL FOUNDRY
Successors to Steiger & Kerr

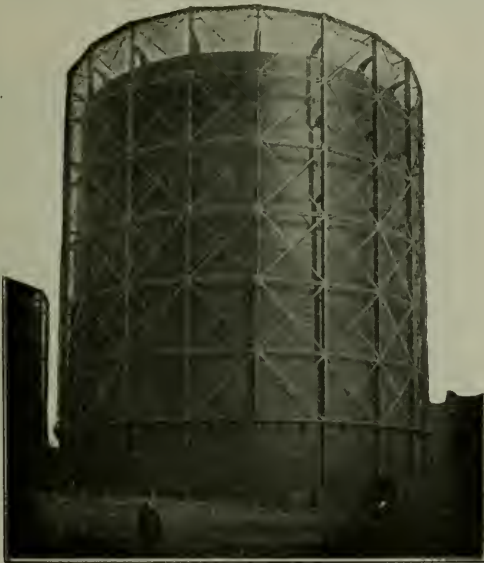
General Foundry Dept.

Machinery, Railroad, Architectural Castings, Bell and Spigot Castings for Gas and Water Mains, Flange Fittings for all Standard Electroliers, Gasoliers and Lamp Posts

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Cast Iron Cooking and Heating Stoves for Wood or Coal.

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Steel Ranges, Gas Ranges for House, Hotel and Apartment.

Corner Folsom and Eighteenth Streets, San Francisco
TELEPHONE MISSION 250



R. D. Wood & Co.

PHILADELPHIA, PA.

Gas Holders
Water and Gas Works
Appliances
Cast Iron Pipe
Pumping Engines
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Hydrants, Valves, etc.



ALLIS-CHALMERS MANUFACTURING CO.

MILWAUKEE, WISC.

District Office: Rialto Bldg., San Francisco, Calif.

Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

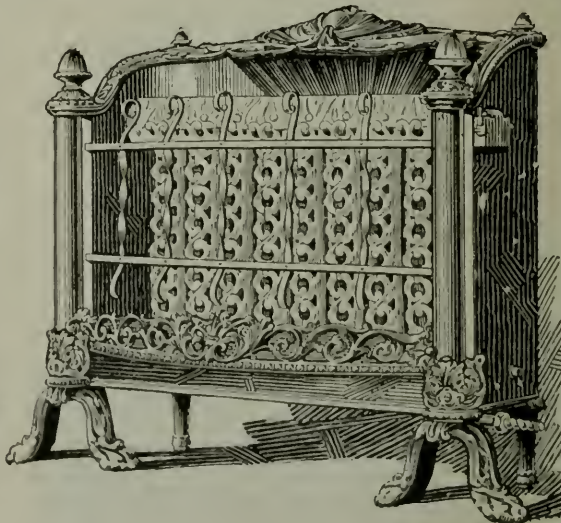
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California

When writing please mention PACIFIC SERVICE MAGAZINE



Three-Conductor, Rubber Insulated Steel Tape Armored Cable.

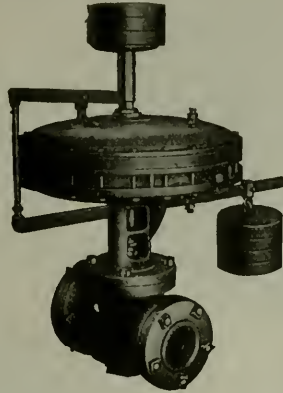
HAVE you considered the advantages to be secured by installing STANDARD Steel Tape Armored Cables underground in a trench without conduits? For certain kinds of service they can be used with great economy as compared with lead covered cables laid in conduits.

Write our nearest office for Bulletin 680

Standard Underground Cable Co.

Pacific Coast Department
San Francisco, Cal.

Seattle Los Angeles Salt Lake City
Factory in Oakland, Cal.



The Fulton Gas Pressure Governors For Artificial or Natural Gas

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

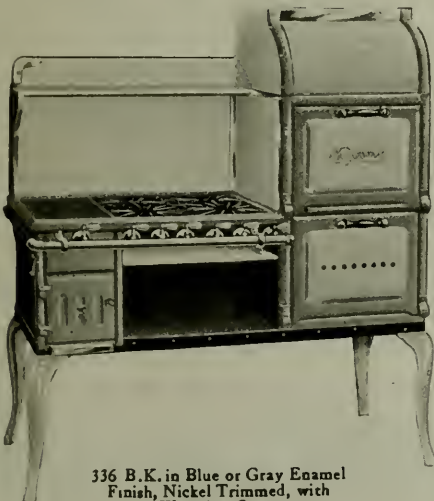
The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

Chaplin-Fulton Manufacturing Co.
PITTSBURGH, PA.

What More Could Any Housewife Ask for Than This Combination Gas Range Offers?

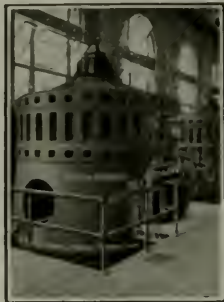


336 B.K. in Blue or Gray Enamel
Finish, Nickel Trimmed, with
Warming Oven

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

Wedgewood
QUALITY SERVICE FUEL ECONOMY

JAS. GRAHAM MFG. CO.
531 Mission St. San Francisco



PELTON

Reaction Turbines for Low-Head Plants
are of two general types, the horizontal double-runner cylindrical-case design, and the vertical single-runner design with either concrete or steel-plate spiral casing.

THE PELTON WATER WHEEL CO.

Hydraulic Engineers

2217 Harrison Street, San Francisco, Cal.

WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

RIVETED STEEL PIPE, STAND PIPES, PENSTOCKS OR ANY SPECIAL
PLATE CONSTRUCTION

ELEVATED STEEL TANKS—OIL OR PRESSURE TANKS

WATER WELL CASING—SURFACE IRRIGATION PIPE

GALVANIZED CORRUGATED CULVERTS—GUARANTEED

STEEL WIRE FENCE WITH SELF-ANCHORING STEEL POST

SAN FRANCISCO, 444 Market Street ✻ LOS ANGELES, 1758 North Broadway

SPRAGUE CAST IRON GAS METERS

Create Economy All Along the Line

IN FIRST COST • ADJUSTING • REPAIRS • UPKEEP
USED BY 90 PER CENT OF ALL CALIFORNIA GAS COMPANIES

Furniture Exchange Bldg.
180 NEW MONTGOMERY ST.
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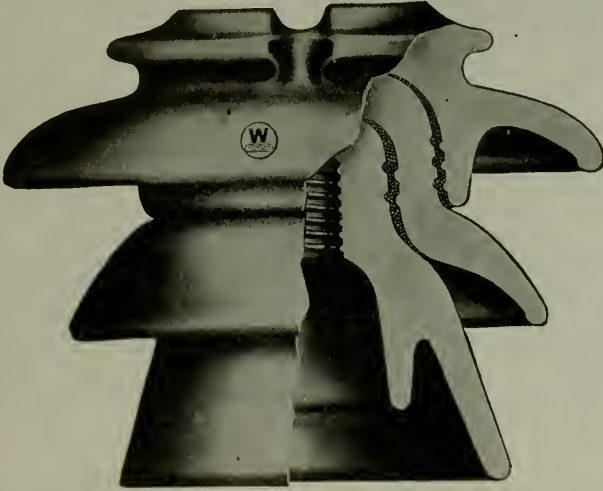
GAS METERS and TESTING APPARATUS PACIFIC METER WORKS OF AMERICAN METER COMPANY

1123 HARRISON STREET
SAN FRANCISCO, CALIF.

2136 ATLANTIC STREET
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Trade—**FARADOID**—Mark

HIGH EFFICIENCY, PIN-TYPE
PORCELAIN INSULATORS



FARADOID insulators were developed by the Westinghouse Electric Company to reduce operating hazards. Their design is based on the following scientific principles:

“If the common surface of two dielectrics conform to the direction of the Faraday tubes between their electrodes, and if the electrodes are properly formed, the highest insulation efficiency is obtained.”

For sections of your transmission line where breakage is high, you can obtain the greatest protection by installing FARADOID Insulators.

Westinghouse Electric & Manufacturing Company
SAN FRANCISCO OFFICE, 1 MONTGOMERY STREET
EAST PITTSBURGH, PA.

Westinghouse



Right or left oven enamel
splushers.

No. 488

39 in. long, 25 in. deep

Oven, 14 in. wide, 18 in.
deep, 12 in. high.



The Gas range you have
been waiting for. Will fit
that limited kitchen space.
Also furnished in full en-
amel finish.

GEO. D. ROPER CORPORATION

ROCKFORD, ILLINOIS

C. B. BABCOCK COMPANY, Managers Pacific Coast Branch

768 MISSION STREET

SAN FRANCISCO, CAL.



American National Bank

of San Francisco

*Invites you to use its fully
equipped banking service*

A Willing, generous service, cheerful in spirit—helpful
by strength and conservative when necessary to
maintain that strength.

It Is our purpose to render a service that will demon-
strate our sincere interest in the financial welfare of
our customers and other freinds.

*Four Per Cent interest allowed in
TIME DEPOSIT DEPARTMENT*

Safe Deposit Department open on business days
from 8 a. m. to 6 p. m.

Corner

California and Montgomery Sts.

PACIFIC SERVICE *to* “PACIFIC SERVICE”



The occasion arose last October, when the switch shown above with its supporting structure was required “with the speed of an antelope”. The switch was ordered on Saturday, October 8th. Our drawing of the support and means of fastening it to the roof beams was approved on Monday, October 10th, and the switch and support complete were delivered to a “Pacific Service” truck on the afternoon of Tuesday, October 11th. We understand that it was installed the next day “with the speed of an antelope”.

PACIFIC ELECTRIC MANUFACTURING CO.

827 FOLSOM STREET, SAN FRANCISCO



Pacific Gas and Electric Company Furnishes

"PACIFIC SERVICE"

TO OVER 602,000 CONSUMERS OF

GAS. ELECTRICITY. WATER. STREET RAILWAY

1,715,959 Total Population Served in Thirty-six of California's Counties

CITIES AND TOWNS SERVED BY COMPANY

	DIRECTLY		INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity	170	1,117,541	61	156,411	231	1,273,952
Gas	57	1,127,609	2	8,600	59	1,136,209
Water (Domestic)	18	61,719	8	15,488	26	77,207
Railway	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
*Alameda.....	28,806	*El Verano.....	400	*Meridian.....	200	*San Leandro....	5,703
*Albany.....	2,462	*Emeryville.....	2,390	*Millbrae.....	300	*San Lorenzo....	500
*Alvarado.....	1,000	*Escalon.....	600	*Mills.....	400	*San Martin.....	250
*Alviso.....	517	*Esparto.....	200	*Mill Valley.....	2,554	*San Mateo.....	5,979
*Amador City..	377	*Fairfax.....	250	*Milpitas.....	300	*San Pablo.....	500
*Anderson.....	750	*Fairfield.....	1,008	*Mission San		*San Quentin....	3,000
*Angel Island..	500	*Fair Oaks.....	300	*Jose.....	500	*San Rafael.....	5,512
*Antioch.....	1,936	*Fall River Mills	300	*Modesto.....	9,241	*Santa Clara....	5,220
*Aptos.....	300	*Farmington....	300	*Mokelumne Hill	900	*Santa Cruz.....	10,917
*Arbuckle.....	900	*Felton.....	300	*Monterey.....	5,479	*Santa Rosa.....	8,758
*Atherton.....	500	*Folsom.....	2,000	*Morgan Hill....	646	*Saratoga.....	500
*Auburn.....	2,289	*Forestville....	250	*Mountain View	1,888	*Sausalito.....	2,790
*Barber.....	500	*Frederick.....	45,086	*Mt. Eden.....	200	*Sebastopol.....	1,493
*Belmont.....	375	*Gilroy.....	2,862	*Napa.....	6,757	*Shasta.....	200
*Belvedere.....	616	*Glen Ellen....	1,000	*Nevada City....	1,782	*Shelville.....	200
*Benicia.....	2,693	*Gonzales.....	500	*Newark.....	500	*Sheridan.....	250
*Ben Lomond..	400	*Grass Valley..	4,006	*Newcastle.....	750	*Smartsville....	300
*Berkeley.....	56,036	*Gridley.....	1,636	*Newman.....	1,251	*Soledad.....	400
*Biggs.....	683	*Grimes.....	500	*Niles.....	1,000	*Soquel.....	400
*Bolinas.....	200	*Groveland.....	500	*Novato.....	400	*Sonoma.....	801
*Brentwood....	400	*Guerneville..	800	*Oakdale.....	1,745	*Sonoma.....	1,684
*Broderick....	700	*Hamilton City.	250	*Oakland.....	216,261	*South San	
*Burlingame..	4,107	*Hammonton....	500	*Oakley.....	200	*Francisco.....	4,411
*Byron.....	350	*Hayward.....	3,487	*Occidental.....	600	*Standard.....	500
*Campbell....	600	*Hercules.....	373	*Orland.....	1,582	*Stanford Uni-	
*Capitola.....	300	*Hillsborough..	931	*Oroville.....	3,340	*versity.....	2,700
*Carmel.....	638	*Hollister.....	2,781	*Pacheco.....	300	*Stockton.....	40,296
*Cement.....	1,000	*Honcut.....	500	*Pacific Grove..	2,974	*Suisun.....	769
*Centerville..	1,000	*Hughson.....	250	*Palo Alto.....	5,900	*Sunol.....	350
*Ceres.....	637	*Jone.....	1,000	*Paradise.....	500	*Sunnyvale....	1,675
*Chico.....	9,339	*Irvington.....	1,000	*Patterson.....	694	*Sutter City....	250
*Colfax.....	573	*Jackson.....	1,691	*Penn Grove....	200	*Sutter Creek..	920
*College City..	250	*Jamestown....	750	*Penryn.....	250	*Tehama City..	196
*Collinsville..	200	*Kennett.....	464	*Perkins.....	300	*Tiburon.....	400
*Colma.....	1,500	*Kentfield.....	500	*Petaluma.....	6,226	*Tracy.....	2,450
*Columbia.....	200	*Kenwood.....	300	*Piedmont.....	4,282	*Tres Pinos....	300
*Colusa.....	1,146	*Keswick.....	200	*Pike City.....	200	*Tualuma.....	1,500
*Concord.....	912	*King City.....	1,048	*Pinole.....	967	*Turlock.....	3,394
*Cordelia.....	300	*Knights Ferry.	200	*Pittsburg.....	4,715	*Vacaville.....	1,254
*Corning.....	1,449	*Knights Land-		*Pleasanton....	991	*Vallejo.....	21,107
*Corte Madera.	607	ing.....	400	*Port Costa....	900	*Vina.....	300
*Cotati.....	200	*La Grange.....	200	*Princeton.....	300	*Vineburg.....	200
*Cottonwood..	500	*Larkspur.....	612	*Red Bluff.....	3,104	*Walnut Creek.	538
*Coyote.....	200	*Lathrop.....	600	*Redding.....	2,962	*Warm Springs.	200
*Crockett.....	1,500	*Lewiston.....	200	*Redwood City.	4,020	*Waterford....	250
*Crow's Landing	300	*Lincoln.....	1,325	*Richmond.....	16,843	*Watsonville..	5,013
*Daly City.....	3,779	*Live Stock....	300	*Rio Vista.....	1,104	*Wheatland....	435
*Danville.....	400	*Livermore....	1,916	*Ripon.....	500	*Williams.....	650
*Davenport....	300	*Lomita Park..	600	*Riverbank.....	200	*Willows.....	2,190
*Davis.....	939	*Loma.....	500	*Rocklin.....	643	*Winters.....	903
*Decoto.....	300	*Los Altos.....	500	*Rodeo.....	300	*Woodland.....	4,147
*Del Monte....	300	*Los Gatos.....	2,317	*Roseville.....	4,477	*Woodside.....	300
*Denair.....	200	*Los Molinos..	200	*Ross.....	727	*Yolo.....	350
*Dixon.....	926	*Madison.....	300	*Sacramento....	65,908	*Yuba City.....	1,708
*Drytown.....	200	*Manteca.....	1,286	*Salinas.....	4,308		
*Duncan's Mills	200	*Mare Island..	600	*San Andreas... 1,183			
*Durham.....	250	*Martinez.....	3,858	*San Anselmo.. 2,475			
*Dutch Flat... 750		*Marysville.... 5,461		*San Bruno.... 1,562			
*Eldridge..... 500		*Maxwell..... 500		*San Francisco. 506,676			
*El Cerrito.... 1,505		*Mayfield..... 1,127		*San Jose..... 39,642			
*Elmira..... 350		*Menlo Park... 900		*San Juan..... 350			

Total Cities and Towns... 1,347,844
 Add Suburban Population... 368,115
 Total Population Served... 1,715,959

Unmarked—Electricity only.

1—Gas only.

2—Gas and Electricity.

3—Gas, Electricity and Water.

4—Gas, Elect. and St. Railways.

5—Electricity and Water.

6—Electricity supplied through other companies.

7—Gas supplied through other companies.

8—Water supplied through other companies.

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The total capacity of water storage reservoirs located in various places of the high Sierras, operated by "Pacific Service" for power and water supply is 8,565,560,000 cubic feet; equivalent to approximately 61,030,000,000 gallons. This amount of water would supply San Francisco's needs at the present rate of consumption for approximately 5 years.

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PUBLISHED MONTHLY BY THE PACIFIC GAS AND ELECTRIC CO. SAN FRANCISCO



HEADWATERS OF THE MOKELUMNE RIVER, ALPINE COUNTY

Vol.
13

MAY 1922

No
12

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Pacific Service Magazine

Volume XIII



Number 12

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VIEWS OF OLD PRINCETON, CLOSELY ASSOCIATED WITH THE EARLY DAYS OF OUR REPUBLIC
Upper left: View through the quadrangle. *Upper right:* Nassau Hall. *Center:* Graduate Hall. *Lower left:* Tower of Nassau Hall. *Lower right:* Interior of assembly room, Graduate Hall.

(See story "Mr. Britton Addresses Princeton University," page 378.)

Progress of Our Pit River Construction Work During the Past Winter

By O. W. PETERSON
Engineer of General Construction

From the time construction was first undertaken on the Pit River projects, transportation has been the most troublesome problem, due to the fact that for seven months of the year snow and mud have rendered the roads over the mountains practically impassable. During these months only the most necessary supplies were hauled for thirty-five miles on wagons or sleighs from Bartle, terminus of the McCloud River railroad, to the construction camps, where work remained almost at a standstill.

The only adequate solution of the transportation problem was determined to be a standard gauge railroad. During the winter of 1920-21 a survey was made from Bartle southeasterly over the Mc-

Cloud-Fall River divide into Cayton Valley and thence up the Pit River to Pit Number One power house site. This route was direct as well as feasible, for it furnished a short connection to a central distributing point on Pit River and insured a tonnage large enough to absorb the expense of railroad construction.

Before the end of September last year the route of the railroad, 34½ miles in length, had been cleared of heavy timber, a roadbed had been graded, trestles and culverts built, the track completed to Pit One power house site, and freight had started moving in over the line. Most of the work was crowded into a three-months period, which was a short time, considering that very heavy timber had



The diversion dam at the intake on Fall River. Pit No. 1 development.

to be cleared, and that difficult grading was encountered on the McCloud-Fall River divide and along the outlet from Cayton Valley to Pit River. The road was built with 4 per cent maximum grade and 15 per cent maximum curvature.

As the road neared completion, a well-planned construction camp for 500 men was erected at its terminus, and another for 150 men was built at the intake of the project, near the town of Fall River Mills. Warehouses, platforms, sidetracks and other serviceable terminal facilities were provided for the quick and economical

have been hauled into Pit One. Without the railroad only a small percentage of this tonnage could have been hauled and, this at an excessive cost. Construction progress without the railroad would have been negligible; with it, very substantial progress has been made.

Pit One is a very compact, simple project. It has a length of barely $2\frac{1}{2}$ miles from its intake on Fall River to the end of the tailrace where it discharges into the Pit. No artificial reservoirs are necessary to impound storage for low-water seasons, since nature, in the vast Modoc lava beds,



The intake canal leading from Fall River to the east portal of the tunnel.

unloading, housing and distribution of materials and supplies.

Since the road has been in operation only minor interruptions to traffic have occurred. During March of this year, when snow over the higher passes had accumulated to a ten-foot depth, it was often necessary to use four locomotives to keep the road open. The icy walls of the trench developed by the successive plowing of snow reached a maximum depth of fifteen feet. To date some fifteen thousand tons of freight and many workmen

has provided a most unusual underground storage extending from Klamath Lake at the north to the head of Fall River Valley, seventy-five miles to the south. Nearly all the precipitation that falls over this region is soaked into this underground basin, to be released much later with scarcely any fluctuation from day to day or even from year to year.

The diversion dam in Fall River is a low concrete structure whose crest will be at river level. The dam, 600 feet in length, will normally divert water from

Fall River into the intake. In case the intake gates are closed for any conceivable cause water will automatically flow with shallow depth over the crest of the diversion dam. Three by-pass gates are provided so that water can be turned through them, if necessary.

The first work at the diversion dam was started in October of last year, and consisted of excavation for that portion of the dam on dry land. Most of this work was easily handled with a Fresno scraper outfit. As soon as the excavation was completed, a pile driver, built on the river bank, started driving the interlocking steel sheet piling that will extend the entire length of the dam. This piling, driven 15 to 25 feet into the hard underlying clays, will form a water-tight barrier or cut-off wall under the dam. The by-pass and all of the dam except the portion in the river channel is now complete. As soon as the gates are in place the river will be diverted through them and the remainder of the dam will then be built.



Interior of tunnel, showing reinforcing steel in place.

The intake will be a substantial reinforced concrete structure with a wide flaring inlet from Fall River. Water will first pass through a grizzly, consisting of a screen of steel bars, and will then be conveyed through the intake gate structure, consisting of three openings, each controlled by a radial gate twenty feet wide and ten feet high. A reinforced concrete highway bridge will span the canal directly over the radial gates.

The intake canal from Fall River to the east portal of the tunnel has already been excavated with a model 40 steam shovel, working in combination with a long boom, skidding, stiff-leg derrick. This

canal is about thirty feet deep with side slopes of 1 to 1 tapering from a width of 55 feet at the intake structure to 22 feet at the tunnel portal. As soon as the ground dries, this canal will be lined to prevent erosion of the banks. The capacity of the canal, like that of the tunnel, is 1,800 cubic feet per second, sufficient to carry the flow of Fall River at all times



Concrete mixer and Cox and Webb concrete gun.



Interior of the tunnel, showing concrete walls after removal of forms.

of the year. Most of the reinforced concrete portal structure was completed in December.

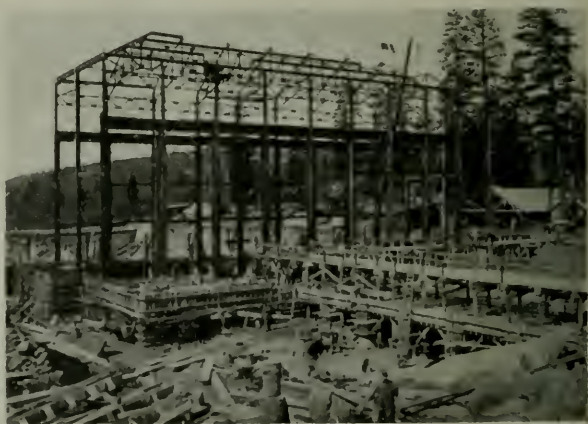
Saddle Mountain, the most southerly of a series of low peaks of volcanic origin along the west side of Fall River Valley, stands between the intake and the power house site. It was decided to drive a tunnel 10,111 feet through the mountain, on a three-per-cent gradient. The tunnel, excavated in the shape of a horseshoe, with arched crown, is 16 feet high, about 15 feet wide at the spring line where the arch and straight side walls join, and about 13 feet wide at the base. The entire tunnel will be lined with concrete having an average thickness of 15

inches, reinforced with steel bars wherever the rock is not self-supporting. It will have a waterway of 154.5 square feet, equivalent to a circle 14 feet in diameter.

Active driving began in December, 1919, part of the time with three shifts and later with but two. The usual methods of modern tunnel driving were employed and, except for the earlier work, the progress was good. Fortunately the tunnel proved to be most favorable in every way. There was no underground water nor troublesome "swelling" ground and only fifty per cent of the footage required the use of timber. On New Year's Eve last the crews "holed through."

The lining operations are already under way with over one fourth of the total completed. Rock and sand for this work are obtained by crushing material excavated from tunnel. Use of the Cox and Webb concrete gun, a recent invention of two California construction engineers, which forces mixed concrete under air pressure from a cylindrical container through several hundred feet on six-inch pipe into the forms, is securing a smooth and compact concrete lining. The lining will be finished in July.

At the west portal, joining the two steel pressure pipes with the tunnel, a



The steel frame of the power house.

large reinforced concrete tank, or surge chamber, about 55 feet high and 60 feet inside diameter, will be constructed. This tank will serve as a regulator of surges resulting from sudden variations in draft on the pipe lines, and in case the turbines are suddenly closed, the water will spill over the open top of the tank into the river. The excavation for this structure is complete, and the concreting, which has been started, will be finished in August.

Two steel pipe lines, 10 feet, 9 inches in diameter at the intake end and 8 feet in diameter at the power house, will deliver water under a head of 454 feet to the turbines. These penstock lines are to be carried above ground surface on concrete piers, and at seven points, they will be securely held by concrete anchors. Two concrete tunnels of 15 feet internal diameter and 185 feet long extend entirely under the switch-house building from the turbines to the foot of the mountain, where they rise sharply to the ground surface. The penstock pipes will enter the power house underground through these tunnels.

The upper portion of each pipe line is the usual riveted steel construction for a distance of 331 feet. For the remaining 1,041 feet Kellogg pipe, with the longitudinal seams forge-welded, has been used. These lines, already laid halfway up the hill, will be entirely completed in June.

Pit One Power House will contain two Allis-Chalmers vertical turbine units, direct connected to generators of 35,000 kilowatts capacity each, making the total installation 70,000 kilowatts, equivalent to 93,300 horsepower. Power, generated at 11,000 volts, will be transformed to 220,000 volts for transmission to Vaca Substation, a distance of 202 miles. The two Hat Creek plants, and, also Pit Number Two, when it is completed, will transmit power at 60,000 volts to Pit One, from which place it will likewise be delivered into the 220,000-volt line.

A reinforced concrete building, with heavy structural steel frame, 42 feet wide, 135 feet long and 82 feet in front elevation, will house the generating units. The switching apparatus will be in a rear wing 32 feet wide by 105 feet long. All transformers will be

placed outdoors on concrete foundations with convenient track connections into the building and within easy reach of the power-house cranes. The power-house building is in keeping with the requirements and importance of the plant and the architecture is in harmony with its setting.

Excavation for the power house, the stilling basin in front of it and the tail-race leading to the river, required a cut about 1,200 feet in length, varying from



Inside the power-house frame, showing the two scroll casings in place.

a maximum depth of 55 feet under the turbine units to 30 feet at the point of discharge. All but the deepest excavation was completed with a steam shovel loading into 4-yard side-dump cars.

The power-house pit had to be excavated to a depth of 30 feet below the

found to be very highly compressed and welladvanced toward sandstone and shale, thus providing a substantial foundation. Over this entire area a thick slab of reinforced concrete was poured, approximately 40 by 100 feet in measurement. In successive stages the hydrocone tables,

concrete draft tubes and other features of the foundation were formed and concreted.

It was decided not to wait for delivery of the power-house steel and erection of the cranes before proceeding with the installation of the machinery. As a substitute for the permanent cranes two red fir spars, 90 feet in length, were set up over the turbine pit. The 30-ton sections of the scroll case units were then lifted into place and assembled.



Unloading the two largest butterfly valves in the world.

general steam shovel cut, an undertaking that would ordinarily require expensive sheet piling and pumping. This was avoided by the simple expedient of sinking an open shaft at the side of and ten feet deeper than the proposed pit. Pumps in this shaft drained the foundation area sufficiently to permit excavation of the entire pit on vertical lines without the use of sheet piling or bracing. The underlying sands and silts were



Lowering valve into position in the power-house pit.

After this work was well started, the structural steel for the building began to arrive. Although it was midwinter and snow frequently had to be cleared from the working area, groups of mechanics, riggers, iron workers, carpenters and other workmen all carried

ahead the various features of the installation without serious interruption. As a result, the scroll-case units were set and concreted in place, the building steel was erected and riveted and power-house cranes installed, foundations and floor of the switch house and practically all outside foundation work was finished and the stilling basin and tailrace with their concrete lining, and the concrete bridge over the tailrace were all complete.



Pit One Camp after a night's snowfall.

Quarters for men who will operate this plant, and a community center for this and the adjacent plants, have also been constructed. These consist of six cottages of four and five rooms and a large clubhouse, all constructed in a manner such as will insure comfort to future residents and visitors.

The tunnel and excavation of the intake and tailrace canals were contracted to F. Rolandi. All the remaining features of

the project, including the construction of the railroad from Bartle, were built by the Company's construction organization. A great amount of work, particularly detail electrical construction, remains to be completed, but by September first Pit One will be finished and in service.



Reminiscent of Switzerland is the newly completed Club House.

Mr. Britton Addresses Princeton University

*Institution of Learning Founded Before the Beginning of Our Republic
Hears the Message of the Great West.*

On Tuesday, April 4th, Mr. John A. Britton delivered a lecture at Princeton University, his subject being "Public Utility Development on the Pacific Coast." This was the fifth of a series of the Cyrus Fogg Brackett lectures, dealing with applied engineering technology, which were founded by the Princeton Engineering Association and are considered an important factor in the plan of establishing closer co-operation between the teaching and practice of engineering.

Dr. Cyrus Fogg Brackett rendered a great service in the advancement of science during his thirty-five years as an instructor at Princeton, having founded the Princeton School of Electrical Engineering, the first school of its kind in this country. Dr. Brackett was also associated with the early pioneer work in the advancement of science in the early eighties, at which time he became associated with Thomas A. Edison. The lectures under the Cyrus Fogg Brackett foundation have called out some of the most distinguished men of the country. It was indeed an honor, then, for "Pacific Service" as well as for Mr. Britton to be singled out from all the men of all the West to speak on so comprehensive a subject as Pacific Coast public utility development.

The lecture was delivered before members of the Board of Trustees, the faculty and the students, and was illustrated by slides and by our company's motion picture "The Development of Northern California." First touching on the important questions of regulation and public relations, Mr. Britton said, in part:

"Public utilities anywhere in the United States are enabled to meet the strenuous demands of the public for service only through the issuance of bonds upon their properties, or by the sale of stock representing the equity in such profits as

may arise. It is a universal law governing utilities today, under regulation, that they are allowed only a reasonable rate of return upon the property actually devoted to public use, that reasonable return, after payment of all operating expenses, being applied to a proper depreciation fund to take care of the entirement or obsolescence of property, the payment of interest upon the borrowed money in the shape of bonds and dividends or other borrowed moneys in the shape of stock issues. It may be true that the return, nominal in character as compared with commercial loans, is almost a certainty, and not subject to the fluctuations of markets; but, it is not a guaranteed return, and it is only through efficiencies and economies, practiced by management, that the rate of return given upon the property is sufficient to pay the wages of capital represented by a return upon the bonded debt and upon stock issues.

"A strong factor in gaining the confidence of the public has been the widespread distribution, by a number of the larger operating companies, of their stock among consumers. Consumer ownership, or partnership, as it might be termed, has created a spirit of co-operation between the public and the companies, the interest on the part of the stockholder insuring to the company that individual concern provocative of a sense of fair play.

"Lord Bacon has truly said that there are three things which make a nation great and prosperous—a fertile soil, busy workshops and easy conveyances for men and commodities from one place to another. He might have added a fourth—Power, and he would have then perfectly described the Pacific Coast States, for all of these essentials of a perfect nation are there to be found."

Tracing the evolution of hydro-electric

development, from its inception in the days of the placer mines to the achievements of today, the speaker said:

"It is a far cry from the pioneer days, of Mark Twain and Bret Harte, of the red-shirted and sombrero crowned miner, to the present days of California. And yet there is a connecting link between those days and these that has helped to make the Pacific Coast what it is today, the superior state of these United States in hydro-electric development.

"Scattered along the western slopes of of the Sierras, in the State of California, are numberless lakes, like diamonds studing the landscape, not only natural but scores of artificial ones, created by the hand of man, when in those pioneer days the hardy miners climbed the heights of the Sierras, reaching up through gully and canyon to where the snows of the winter found lodgment over granite hills, bringing from those lakes water in volume through flume and ditch to the lower levels of the foothills, where Mother Earth held gold in her grasp. There are at the present time in existence and in use wooden flumes built

in the early fifties, serving the purpose now of carrying water to the wheel that turns the generator to grind out the power for the use of industry today."

In paying tribute to the pioneers of the industry, Mr. Britton honored two men to whom more than any others the great West owes its wonderful record for

achievement in hydro-electric development, name'y, John Martin and E. J. de Sabla, Jr. Taking the record from their day to the present, a span of little over twenty years, Mr. Britton summed up the achievements placed to the credit of California as follows:

"California possesses the greatest interconnected system of power transmission lines in the world. From Medford, Oregon, on the north, to the Mexican border on the south and thence northeasterly into the State of Nevada, there is a continuous bus bar into which all the power companies feed. The largest concentrated block of power ever available is made possible by this interconnection. The state has to its credit the longest high voltage transmission line in the world, 539 miles, from Mono County to Yuma, Arizona, the line voltage ranging from 55,000 to 87,000. It possesses the highest privately owned dam in the world, Lake Spaulding, in the gorge of the South Yuba River, property of the Pacific Gas and Electric Company and the controlling reservoir for twenty-eight other lakes. The largest high-head

impulse turbines in the world are located in the new Caribou plant of the Great Western Power Company. I have heretofore spoken of the 93,000 horsepower plant which will be located on the Pit River by the Pacific Gas and Electric Company, the output of which will be transmitted at a voltage of 220,000, the



PRESENTED TO

John A. Britton, Esqre.

IN APPRECIATION OF HIS SERVICES

AS

CYRUS FOGG BRACKETT LECTURER

BEFORE THE ENGINEERING FACULTY &

STUDENTS OF PRINCETON UNIVERSITY

UNDER THE CYRUS FOGG BRACKETT

LECTURESHIP IN APPLIED ENGINEER-

ING TECHNOLOGY.

Arthur M. Greenleaf
DEAN OF ENGINEERING
PRINCETON UNIVERSITY

John Martin
PRESIDENT
PRINCETON UNIVERSITY

PRINCETON
NEW JERSEY
April 4, 1922

William C. Brown
PRESIDENT
PRINCETON ENGINEERING
ASSOCIATION

highest voltage at which energy has been transmitted anywhere in the world.

"These few examples illustrate what the patience, perseverance, ingenuity and initiative of the descendants of the pioneers have accomplished, leading the world in electrical development, producing marvelous results in the construction of reservoirs, ditches and flumes through vast mountain regions, spanning mountain gorges and valleys with their miles of aerial lines, carrying electricity from the snow-crested mountains to the valleys.

"There is to my mind a triangle existent in all human affairs. That triangle consists of power, population and industry. Power attracts industry and industry demands population. California now has ample power, present and potential, and the base line of the triangle is built. We are endeavoring to finish this triangle with industry and population, and to develop hidden resources of minerals in which the state abounds. Truly power is king in California and our state's progress and development in the last ten years to the eighth place among the states of the nation in population and fifth in industry must be largely attributed to our ability to supply power at the low cost furnished within our state."

That the importance of that great public servant, Gas, was by no means overshadowed by the pre-eminence of electricity, was evidenced by Mr. Britton's comments on this branch of our business:

"The most ancient server of the public, artificial gas, scarcely more than one hundred years old, has assumed greater development than any of the other products of public utilities. In California it was first introduced into the City of San Francisco in the year 1854, the process of manufacture being that commonly known as coal gas production. About the year 1880, the process of manufacture, due to the discovery of oil, was changed to that of water gas, and about 1901 or 1902 this

process was generally abandoned throughout the state and the oil gas process now common in California was introduced and is today the only process applied in the generation of artificial gas.

"When electricity was first introduced in 1879 everyone prophesied the downfall of the gas companies as it was thought electricity would take the place of gas for illuminating purposes, the only purpose for which it was being used at that time. In 1885 the Welsbach burner was invented and immediately gas once more became a factor in lighting. When incandescent electric lighting was first introduced, gas was again threatened. But from that day new uses were discovered for it and again the day was saved. During the later years great developments have been made in its utilization for industrial purposes and the consumption of gas in the United States and particularly in California has continued to increase to a greater degree than the use of electricity."

In closing Mr. Britton said:

"Let us revere those landmarks that have made America famous, have made it the haven of the oppressed, but do not let the oppressed become the oppressors. Reverence for the flag, love for the fundamentals that have made our country great are the principles for which we should fight with all the red blood that belongs to the true American. Finally, bear in mind that epigram of President Harding which, to my mind, spells more for the success of our country than anything that has ever been done—'Less government in business and more business in government.'

At a reception given in his honor, Mr. Britton was presented with an engrossed certificate which bore the seal, in the college colors, of the Princeton Engineering Association and was signed by President Hibben of Princeton, Dean of Engineering Greene, and Thomas Robins, Jr., President of the Engineering Association.



From San Francisco to Atlantic City by 'Phone

MEMBERS OF THE N. E. L. A. CONVENTION HEAR MESSAGES OF GREETING FROM MESSRS. BRITTON AND BALLARD, ON THE OPPOSITE SIDE OF THE CONTINENT.

On the evening of Thursday, May 18th, a spectacular feat of long-distance telephony was accomplished when Mr. John A. Britton, Vice-President and General Manager of our company, and Mr. R. H. Ballard, Vice-President and General Manager of the Southern California Edison Company, addressed the members of the National Electric Light Association assembled in convention at Atlantic City, N. J., from headquarters of the Pacific Telephone and Telegraph Company in San Francisco.

Messrs. Britton and Ballard accepted a special invitation to transmit their respective messages of greeting over specially cleared circuits across the 3,000 miles of distance separating the opposite shores of the continent. At the convention hall on the pier at Atlantic City both messages, through the agency of the Bell loud speaker, were heard as clearly and distinctly as though the speakers had addressed the vast audience in person.

Needless to say, the members of the convention were delighted as well as surprised at hearing from their friends on the far away Pacific Coast. As the spoken words came to them they gave vent to their appreciation in unrestrained applause, and it is interesting to relate that the sound of the cheering was conveyed to the ears of the speakers in San Francisco as clearly as their words had rung in the ears of their Eastern brethren.

Following is the text of our Mr. Britton's brief address:

Russ Ballard has intoned to you a personal touch in words recalling many happy associations of the past, and in his felicitations I heartily join. It is my privilege and my pleasure to transmit to you the greetings and congratulations of the Pacific Coast, from the border line of the Canadian Provinces to Mexico, and from the snow-capped Sierra peaks to the Pacific Ocean.

Within that vast empire and speaking with one voice, the public utilities affiliated with the National Electric Light Association tonight extend to their co-laborers in the field gathered on the shore of the great Atlantic their good wishes and, also, their appreciation of the constructive work of the Association, which throughout the vast domain it serves has made for better relations between the server and served. The Association has also by its encouraging attitude promoted and assisted in the solution of problems of engineering, resulting, in final analysis, in bringing about the greater utilization of energy, by making it the greatest servant of all mankind. All hail, therefore, to the genius, the skill, the patient research of the men of the N. E. L. A.—benefactors of their race.

Science has in a few years conquered the earth, the sky and the sea. Distance no longer has its terrors. The flash of lightning harnessed to do man's will, brings the whole universe into instant contact; forces heretofore uncontrolled now bend to the will of their master; the task of control has but begun; the next and most significant step will be that control of the mind of the human race to a better thinking, better acting condition, when reason and not prejudice will prevail, when right and not might will count, and to that end an Association like ours must bend every effort, so that those to whom we are responsible, that is, the millions we serve, will recognize that the slogans of the destructor are false in note. Then the benison of reward for true service may come to us, come with a heartiness from all so that the words "Well done, thou good and faithful servant" may not be meaningless. Let us resolve, from Pacific to Atlantic, to achieve and deserve the commendation.

The gray shadows of night are now falling on the Western rim of this continent. Let tomorrow's sun find us up and doing to accomplish our tasks with fortitude and determination—lest we be misunderstood. Good Night.

How "Pacific Service" is Meeting the Demands of Its Gas Consumers in the Bay Cities

Ten Million Cubic Foot Holder Ordered for San Francisco

By W. S. YARD

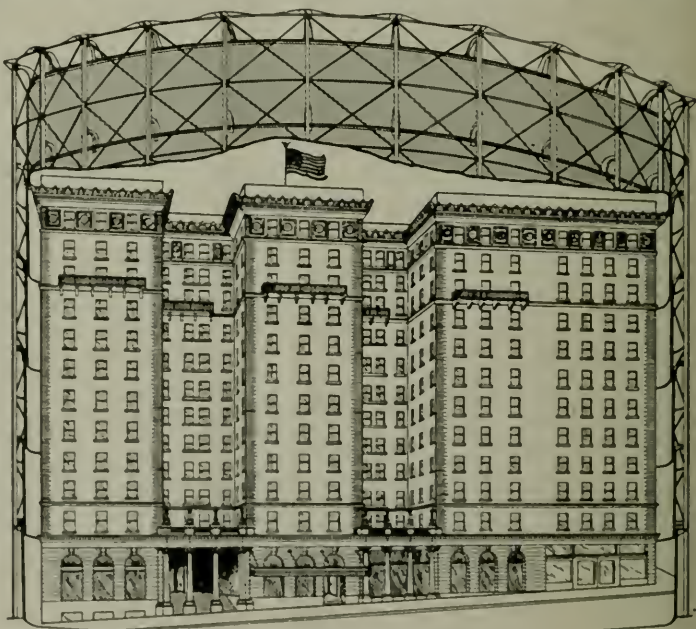
Vice-President in Charge of Gas Construction and Operation

Gas service to the city of San Francisco is supplied by two gas-generating stations, the Metropolitan plant with a daily capacity of 6,000,000 cubic feet, located near the foot of Powell Street, and the great plant of the Potrero, with a maximum daily output of 30,000,000 cubic feet. The latter plant also supplies gas by high-pressure transmission to the Peninsula as far south as Palo Alto, a distance of approximately thirty-four miles. In addition to these two generating plants, a 2,000,000 cubic foot holder and booster plant, known as the North Beach station, is maintained at Bay and Buchanan Streets to furnish additional service during the early evening hours, which is the time of maximum demand.

Gas is supplied to the major part of the city by means of low-pressure distribution, that is, pressure is maintained in the large mains by means of fans or boosters at the Potrero and Metropolitan plants. The Richmond, Sunset, Ingleside, Westwood and Excelsior districts, as well as the section known as "Butchertown," are supplied mainly by high-pressure transmission, in which system the gas is compressed from 25 to 30 pounds pressure and

transmitted to the various districts where the pressure is reduced by means of governors before it is supplied to the consumers. The main trunk lines are connected to both the Metropolitan and Potrero stations so that pressures are maintained from both plants, insuring continuous service.

The demand for gas has been steadily increasing from year to year since 1911, at which time 72,377 consumers were served with an output of three and one-half billion cubic feet. In 1921 a total of 135,000 consumers were served with an



The enormous size of the 10,000,000 foot holder, may be visualized by comparing it with the Hotel St. Francis
Sketched by C. R. Eaton, Gas Department

output of six and a half billion cubic feet. During recent years the people of San Francisco have begun to realize that gas is the ideal fuel for heating, with the result that large numbers of heating installations are being made in offices, homes and public buildings. In addition, gas is being used in all lines of industrial work. This has resulted in a very large increase in gas consumption during the winter just passed.

A maximum day's sendout of 27,278,000 cu. ft. was recently established, representing an increase of twenty-one per cent over the previous year's record. Such a large increase in sendout requires additional holder capacity in order to have adequate supply to meet any demands which may be made. At the present time the holder storage capacity of San Francisco is 11,000,000 cu. ft., distributed as follows: 7,000,000 cu. ft. capacity at the Potrero plant, 2,000,000 cu. ft. capacity at the North Beach plant and 2,000,000 cu. ft. capacity at the Metropolitan plant. This storage capacity has been adequate, up to the present time, on account of the great capacity of the Potrero generators which were installed in 1915 and 1918, but a study made of the probable requirements of San Francisco for the next few years showed that additional storage capacity would be urgently needed before the winter of 1923-24. It was determined, then, to take advantage of the present low price of steel and install a very large holder immediately, providing ample storage for a number of years to come. A 10,000,000 cu. ft holder was decided upon, it being the most economical size for a large storage holder, and a contract was entered into with the Bartlett Hayward Company of Baltimore, Maryland, about the middle of April to furnish and erect a holder of this size.

The problem of locating a suitable site for a holder of this size was of no small consideration. Owing to the enormous diameter of the tank it was impossible to find a city block which would contain

the holder without encroaching on a public street. After a study of various locations a suitable site was finally obtained on the west side of Army Street, near De Haro. The holder can be erected on this site at a minimum cost for foundation, as the entire structure will be situated on bedrock. This location is also advantageous, in that by running a short line from the holder to the center of the Mission district, a very large section of San Francisco can be supplied with gas at holder pressure, eliminating the necessity of excessive boosting during peak hours at the Potrero plant. This will result in considerable economy in the distribution of gas, and the large storage provided will also permit the Potrero plant to operate at maximum capacity twenty-four hours per day, resulting in a considerable saving in generating costs. It is proposed to run a thirty-inch welded steel pipe line from the Potrero plant to the holder, a distance of approximately 6,000 ft., through which the holder will be filled during the night hours.

The foundation will be completed by September 1, at which time the Bartlett Hayward Company will start erection. It is expected to have the holder in operation before June 1st of next year. Fabrication of the steel has already started and the first ship load is expected to leave Baltimore about August 1st.

The container will be a five-lift telescopic holder with steel water tank. It will have a maximum diameter of 281 feet and a total height of 240 feet. The water tank will have a diameter of 273 feet, with a height of 38 feet, and will contain 16,668,000 gallons of water which form the "water seal." The holder when fully inflated will throw 12.1 inches of pressure. The bottom course of steel plate of this tank will have a thickness of two and three-sixty-fourth inches and the total structure will weigh 8,794,000 pounds or 4,397 tons. The total cost, including foundation and property, will be approximately \$700,000.

Base of Oakland's New Gas Holder Lowered into Position

By ROY COOK

Assistant Engineer, Department of Civil Engineering

On the afternoon of April 24, the steel bottom of the six million cubic foot holder, in process of erection at Oakland gas works, was lowered to the sand cushion covering the foundation. The new holder is located at gas station "B" between the present two million foot holder and a battery of purifiers. It will almost entirely fill all the available space at the plant, the distance between the old structure and the new being but about eight feet. The site was formerly used as a storage yard and a great mass of miscellaneous material, two buildings, a railroad spur-track and a twenty-five-inch gas main had to be removed before construction could be started. It was also necessary to remove

a small mountain of lampblack, the excess accumulation of several years.

Clearing of the site began about the first of February and was entirely complete by March 10. Steam shovels and motor trucks were used in making the excavation. While the clearing was in progress two steam shovels started digging; one shovel excavating in the foundation area, the other cutting a roadway through the lampblack pile. The excavation was commenced February 7 and the portion for the foundation was completed on March 15. In all, a total of 19,000 cubic yards was excavated. While the excavation was under way a pile-driver was brought in and erected near



Over 150 men with jacks were required to lower the big holder bottom into position

the site. Driving of piles started on March 6 and was completed March 31. A total of 2,694 piles was driven, each having an average penetration of nineteen feet. The penetration from the final blow of the hammer was carefully measured as each pile was driven, and if penetration fell below the cut-off line another pile was driven. Each pile in the entire foundation is capable of withstanding a load of thirty tons. The piles used were pulled out of the ground at the Liberty shipyards, sawed to the required length and delivered to the site on railroad cars. It was possible to predetermine very closely the correct length of the piles as test piles had been driven at various locations prior to the commencement of the work.

The west half of the foundation was completed first. Piles were sawed off, the mat of reinforcing steel was placed and the work of pouring the slab was started. As the pile drivers were still working on the east half there was some apprehension as to the advisability of starting the concrete work because of vibration. Careful tests were made and the vibration was found to be much less

than supposed. Concreting was completed on April 9.

On April 11, the Bartlett-Hayward Company commenced laying the steel plates for the tank bottom. This was assembled and riveted on supports twenty-seven inches above the foundation. After being riveted and caulked, some 150 jacks were placed in holes provided through the plate, the temporary supports were removed and a two-inch layer of sand was evenly spread over the entire foundation. The bottom was then ready to be lowered.

The lowering attracted wide attention as quite a spectacular event. Four movie cameras were in evidence, also numberless amateurs with their "Kodaks." The motion pictures were later shown at the various theatres in the "News Weeklies." Lowering was accomplished by placing a man at each of the jacks. A gong was placed in the center of the scene of operations, and at its sound every man walked once around, giving the jack one full turn. The lowering was accomplished in twenty-three and one-half minutes, establishing, according to gas superintendent Van E. Britton, a world's record for this class of work.



Group of "Pacific Service" Engineers responsible for the erection of the new holder.

Left to right: J. M. Dickey, H. J. Smith, I. C. Steele, Van E. Britton, W. S. Yard; Col. Beck, Roy Cook, R. Wilson, L. F. Gehring, D. Tripp and C. E. Surgeon.





JOHN TOLAND



PETER MCGEE



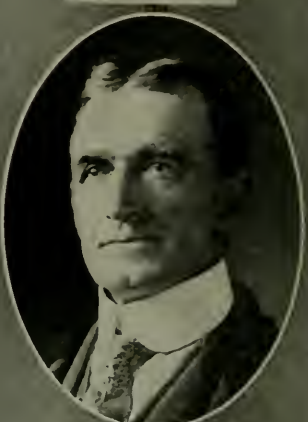
MICHAEL DARMODY



MARTIN MURPHY



JOHN C. MURPHY



TIMOTHY LYNCH



JOHN J. MURPHY



S. A. MCCRARY



W. E. TOWNSEND

The "Pacific Service" pension roll. These portraits are of nine former employees whose long and faithful service has entitled them to honorable retirement.

The "Pacific Service" Roll of Honor

Heading the honor roll of "Pacific Service" are 64 names of men whose long and faithful service to our company has been rewarded by their honorable retirement with provision for their declining years under our company's pension system, which underwent complete revision last fall.

In the last three issues we presented the portraits of twenty-seven men whose names are upon our company's pension roll, accompanied by their several service records. In doing this we were actuated by a desire to make our readers acquainted with these men and their records and to point out what is generally recognized in all up-to-date business enterprise, namely, that long and faithful service shall have its reward.

Opposite this will be found the fourth installment of nine portraits of our company's pensioners arranged according to terms of service. These are:

John Toland. 78 years of age, having been born May 4, 1844. Entered the service of the San Francisco Gas Company in May, 1869, and retired on a pension August 1, 1913, at which time he was employed in San Francisco Division.

Peter McGee. 76 years of age, having been born in 1846. Entered the service of the San Francisco Gas Light Company in November, 1873, and at the time of retiring on a pension, October 1, 1914, he was in the San Francisco Division.

Michael Darmody. 77 years of age, having been born in 1845. Entered the service of the Pacific Gas Improvement Company, in the Gas Department, in 1885. Retired on a pension May 1, 1917, at which time he was in the Gas Distribution Department of the San Francisco Division.

Martin Murphy. 57 years of age, having been born in 1865. Entered the service of the San Francisco Gas Light Company in 1885, retiring on a pension March 1, 1918, at which time he was employed in the Gas Distribution Department of the San Francisco Division.

John C. Murphy. 70 years of age, having been born June 28, 1852. Entered the service of the San Francisco Gas Light

Company in 1887. Retired on a pension May 1, 1917, at which time he was employed at the Potrero.

Timothy Lynch. 57 years of age, having been born April 12, 1865. Entered the service of the San Francisco Gas Light Company in November, 1889. At the time of retiring on a pension, April 1, 1918, he was employed in the San Francisco Division.

John J. Murphy. 67 years of age, having been born in 1855. Entered the service of the San Francisco Gas Company in 1890 and at the time of retiring on a pension, March 1, 1918, was employed in the Gas Distribution Department of the San Francisco Division.

S. A. McCrary. 70 years of age, having been born February 10, 1852. Entered the service of the South Yuba Water Company in May, 1890. At the time of retiring on a pension, November 1, 1919, was ditch agent in the Placer District.

W. E. Townsend. 71 years of age, having been born May 18, 1851. Entered the service of the Central Street Railway in August, 1891, and at the time of retiring on a pension, May 1, 1917, was employed in the Sacramento Division.

The Financial Side of "Pacific Service"

Following is condensed approximate Income Account Statement for the first three months of 1922, compared with the same period last year.

Gross revenue increased by \$153,040.37, while operating expenses showed a decrease of \$179,487.86. Net income amounted to \$3,858,915.13, an increase of \$332,528.23, or 8.6% over the same period last year.

CONSOLIDATED INCOME STATEMENT (Including operations of Mt. Shasta Power Corporation) THREE MONTHS ENDED MARCH 31ST

	1922	1921	INCREASE	DECREASE
Gross Earnings, including Miscellaneous Income.....	\$9,872,383.46	\$9,719,813.09	\$ 153,040.37	.....
Maintenance, Operating Expenses, Rentals, Taxes (including Federal Taxes) and Reserves for Casualties and Uncollectible Accounts.....	6,013,968.33	6,193,156.19	.....	\$179,487.86
Net Income.....	\$3,858,915.13	\$3,526,386.90	\$ 332,528.23	.....
Net Interest Charges.....	1,282,362.56	1,233,713.68	48,648.88	.....
Balance.....	\$2,576,552.57	\$2,292,673.22	\$ 283,879.35	.....
Bond Discount and Expense.....	109,352.26	93,121.94	16,230.32	.....
Balance.....	\$2,167,200.31	\$2,199,551.28	\$ 267,649.03	.....
Reserve for Depreciation.....	895,460.30	767,269.43	128,190.87	.....
Balance to Surplus.....	\$1,571,740.01	\$1,432,281.85	\$ 139,458.16	.....
Dividends Accrued on Preferred Stock (6%).....	616,996.61	519,222.09	97,774.52	.....
Balance.....	\$ 954,743.40	\$ 913,059.76	\$ 41,683.64	.....
Dividends Accrued on Common Stock (5%).....	133,131.14	425,219.26	7,911.88	.....
Balance.....	\$ 521,612.26	\$ 487,840.50	\$ 33,771.76	.....

Sales of electric energy in the month of March increased by about 4,000,000 K. W. Hrs., or 5½%. This is the most decisive increase experienced for several months. Power sales were heavier than last year in all groups except mining, in which, however, there is a distinct revival under way. Gas sales during the quarter increased 233,000-000 cubic feet, or 7.36%, and have at no time during the general business depression shown any falling off, due, undoubtedly, to the increasing demand for this commodity for house-heating and industrial purposes, two fields in which we can foresee great future expansion. Water conditions promise to be excellent throughout the year, there being in the water sheds tributary to our hydro-electric plants about twice the amount of well-packed snow that there was last year at this time. About September 1, Pit River Plant No. 1, with an installed capacity of over 93,000 H. P., will be placed in operation. This plant contains the largest generating units in the United States.

The flow of Pit River is practically without variation, and if this plant were utilized to supply only one city or locality, or one line of industry, probably 60% of the water would be absolutely wasted, but owing to the magnitude and diversified character of the Company's load and the large and varied character of the territory served by it all of the potential energy of this plant will be utilized. As of March 31, 1922, the Company's Plants and Properties Account stood at \$186,657,000, an increase since last March of \$18,381,000, which is the amount of money the Company has invested in additional facilities within the year. The Company still has an uncompleted construction program on its books of about nine and one-half million dollars, but is in excellent financial shape to proceed with it as cash and cash items at the close of March, 1922, excluding moneys reserved for the retirement of Five Year Notes on May 1, aggregated about eleven million dollars.

CONSERVATION OF ASSETS

A factor which is largely responsible for the Company's steadily improving financial position and its excellent credit standing, is the conservative policy pursued for many years with respect to the disposition of net earnings.

Of the aggregate gross revenue of \$302,448,160 received in the past sixteen years, as shown in the first of the two following tables, \$69,443,894 represents the balance remaining after the payment of interest charges. Of this amount only \$24,116,000, or slightly more than one-third, was actually expended for cash dividends, the remainder being retained in the business as indicated in the second of the tables given below:

Year	Gross Revenue Including Miscellaneous Income	Maintenance Operating Expenses and Reserves	Taxes	Net Earnings Before Depreciation	Interest	Balance
1906	\$ 8,947,162	\$ 4,139,233	\$ 283,886	\$ 4,524,043	\$ 2,784,908	\$ 1,739,135
1907	11,342,140	5,978,967	247,262	5,115,911	2,854,264	2,261,647
1908	12,657,305	6,517,930	274,789	5,864,586	3,021,722	2,842,864
1909	13,491,288	7,211,517	320,059	5,959,712	2,988,521	2,971,191
1910	14,044,596	7,538,461	382,880	6,123,255	3,006,256	3,116,999
1911	14,604,609	7,697,370	516,702	6,390,537	3,254,133	3,136,404
1912	14,651,786	7,808,592	622,969	6,220,225	3,476,078	2,744,147
1913	16,094,514	8,655,044	676,163	6,763,307	3,794,222	2,969,085
1914	17,100,534	8,170,874	743,047	8,186,613	4,071,432	4,155,181
1915	18,778,446	8,356,148	849,445	9,572,853	3,819,676	5,753,177
1916	18,941,427	8,586,318	972,565	9,382,544	3,660,976	5,721,568
1917	20,118,990	10,351,452	1,253,239	8,514,299	3,898,169	4,616,130
1918	22,870,194	11,247,391	1,782,939	9,839,864	3,881,542	5,958,322
1919	26,309,671	14,287,089	1,962,038	10,060,544	4,012,240	6,048,304
1920	31,985,791	20,898,531	2,559,109	11,528,151	4,511,251	7,016,900
1921	37,509,707	21,013,190	3,265,895	13,230,622	4,797,782	8,432,840
	\$302,448,160	\$158,458,107	\$ 16,712,987	\$127,277,066	\$ 57,833,172	\$ 69,443,894

To Retire Bonds.....	\$13,036,000
Reinvested in Property.....	16,316,000
For Replacements and Rehabilitation.....	15,221,000
Cash Dividends.....	24,116,000
Other Purposes.....	755,000

Total..... \$69,444,000

CONSTRUCTION

A Song of the Pit River Development

By H. S. Furlong

Decoration by E. W. Deane

To the tunnel's mouth, far up the hill,
A car creeps in and gluts its fill
Of rock and earth; its gorging done,
Returns again to light of sun,
And in the canyon, deep and wide,
Its load it spills to the mountain side.

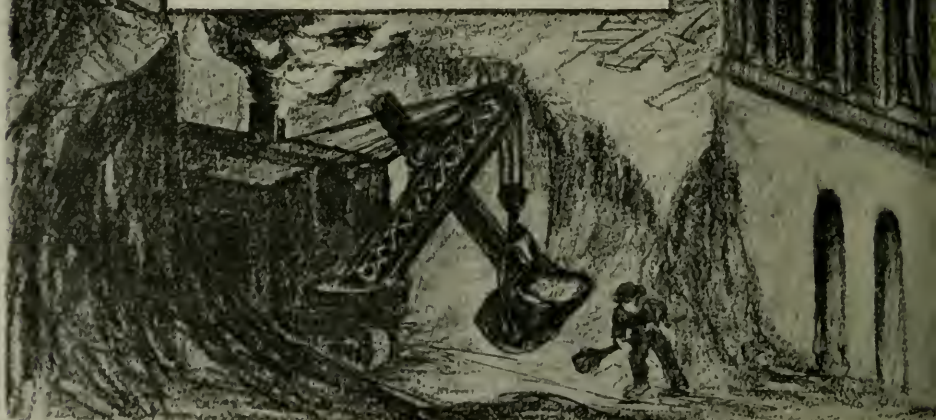
Twin tubes of steel with rivets bound,
Like two strange serpents, black and round,
Vibrate and shake to the deafening roar
Of the rivet gun. By the river's shore,
A monster of steel, breathing clouds of steam,
With talons hung on a massive beam,
Wallows and snorts through the rock and sand,
And hurls it high with a mighty hand.

With a clanging bell and a hiss of steam,
An engine, sturdy and broad of beam,
Hauls tons of pipe and rock and steel
And cords of wood and bags of meal
Through all the maze of the miles of track;
Its load discharged, it hurries back,
And all day long its great bell clangs,
As it fussily puffs and snorts and bangs.

A structure of steel is rising high,
Sprung from the earth to the deep blue sky,
While over its girders the workmen tread,
Like spiders weaving a magic web,
And shuddering over the structure runs
The tremor and shake of the thund'ring guns.

Here where the mountains are bold and steep,
Here where the rivers are wide and deep,
Here where the life of the earth began,
A river is harnessed by hand of man.

Here where the rivers seaward flow,
Glutted by Shasta's eternal snow,
Here where the fires of hell burst forth,
And the mountains rocked from south to north,
Here in the heart of a wonderland,
To the god of Power a temple is planned.





Pacific Service Magazine

PUBLISHED IN THE INTERESTS OF ALL EMPLOYEES OF THE
PACIFIC GAS AND ELECTRIC COMPANY

JOHN A. BRITTON - - - - - EDITOR-IN-CHIEF
FREDERICK S. MYRTLE - - - - - MANAGING EDITOR
A. F. HOCKENBEAMER - - - - - BUSINESS MANAGER

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The Pacific Gas and Electric Company desires to serve its patrons in the best possible manner. Any consumer not satisfied with his service will confer a favor upon the management by taking the matter up with the district office.

VOL. XIII MAY, 1922 No. 12

EDITORIAL

Considerable public comment has been aroused by the decision, in March last, of the United States Supreme Court in the New York gas rate case.

In brief, the court held the 80-cent gas law of the State of New York to be confiscatory and unconstitutional and ordered the return to the Consolidated Gas Company of New York City and its subsidiaries of funds impounded by the lower court amounting to several millions of dollars, these funds representing the difference in amount paid by consumers between the 80-cent rate fixed by legislative enactment and a \$1.20 rate fixed by the Federal District Court.

This decision terminated a contest which opened in 1906, when the State law fixing the permanent gas rate at 80 cents per thousand cubic feet was enacted, although the first suit brought to enjoin the enforcement of this law was eventually dismissed without prejudice, and it was not until 1919 that the proceeding resulting in the decision referred to was instituted.

In passing such a law the State Legislators ignored all economic laws, conditions and policies. They declined to admit that gas, like any other commodity, must fluctuate in price accord-

ing to operating and other conditions affecting generation and distribution. The idea of making a hard and fast price for any commodity for all time would seem absurd to even the merest tyro in economics, but the politicians who railroaded it through evidently thought the great mass of the people would rise up in sympathy and through pressure of public clamor would enforce its continuance. Among the points made by the court in its decision were these:

"Since 1907 the gas company has been subject to supervision by a commission empowered to prohibit unreasonable rates. The presumption is that any profits from its business were lawfully acquired. . . . Mere past success could not support a demand that it continue to operate indefinitely at a loss. The public has no such right in respect to private property, although dedicated to public use."

This decision is regarded in the East as an eye-opener to the political agitators and others who would hold the public utility outside the pale of regular commercial enterprise in its relation to the public it serves and its right to fair treatment at the public's hands.

On this subject of gas rates the Henry L. Doherty Company calls attention to the prices paid for this commodity two or three generations ago when the gas industry was in comparative infancy and gas was used for lighting purposes only. In 1847 the Louisville Gas and Electric Company charged \$3.50 per thousand cubic feet, and allowed a discount of 5 per cent if the bill was paid within three days from receipt. Across the face of the bill was printed the warning that the gas would be turned off if the bill was not settled within ten days from presentation. Twenty years later, after the close of the Civil War, prices prevailing in other cities per thousand cubic feet ranged as follows:

Memphis, \$5.50; St. Louis, \$4.50; Nashville, \$4.50; Mobile, \$5; Atlanta, \$5.50; Savannah, \$6; Norfolk, \$6; Vicksburg, \$6; New Orleans, \$4; Charleston, \$7; Montgomery, \$8; Macon, \$8; Galveston, \$8; San Francisco, \$6; Sacramento, \$9.

"Pacific Service" can go the Henry L.

Doherty Company's statistician one better in his record for prices charged for gas in the long ago. The books of the old San Francisco Gas Company as far back as 1856 show that the price charged for gas to consumers in the Western metropolis was \$15 per thousand cubic feet.

The city of Gilroy, after many years' experience with its gas and electric plants, has sold those municipal undertakings to the Coast Counties Gas and Electric Company of San Francisco.

Operating as a part of an extensive and efficiently managed system, the Gilroy properties can now be made to furnish efficient and enlarged service which the municipal plants failed to deliver. The money from the sale of the plants has been used for improving and extending the water system, sewer system and fire department, thus relieving the taxpayers from this burden of expense.

This is a fair illustration of the termination of the majority of municipal light, heat and power enterprises. Many communities find that the returns from these undertakings cannot defray operating expenses, take care of fixed charges and, at the same time, provide against depreciation, obsolescence, etc., at rates as advantageous as those offered by private utilities. As a result the plants become failures, financially, and the burden falls on the taxpayers.

From far off Detroit comes the following word of appreciation of the heroism and initiative displayed by D. M. Nicholas and Frank Monohan, who, on the memorable night of January 9th, saved the Potrero Gas Plant from possible destruction. An account of how this was accomplished appeared in the January issue, under the heading "Two Brave Men."

DETROIT LUBRICATOR COMPANY

Detroit, U. S. A.

John A. Britton, Esq.
Editor-in-Chief,
Pacific Service Magazine,
445 Sutter St.,
San Francisco, Cal.

Dear sir:

May I express the thought that the article "Two Brave Men," in your January issue is as compelling in its inspiration as was "The Message to Garcia"; the world should know of it.

The PACIFIC SERVICE MAGAZINE comes to me as a result of a very small stock investment of my mother's and I can be but glad she has invested in an organization that has not only such men as Nicholas and Monohan, but does not let so conspicuous an act pass unnoticed. I am wishing that your future and your success may be even more than you can anticipate.

Most cordially,
(Signed) HERBERT I. LORD,
Vice-President.

READERS OF PACIFIC SERVICE MAGAZINE, TAKE NOTICE

This number is the last of Volume XIII, and, as has been done in the past, each district office will be supplied with a bound copy for the office library.

Those who have all the copies of Volume XIII, or any previous volume, in perfect condition, may have them bound by forwarding them, charges prepaid, to the Stationery Department.

The charges for binding will be \$1.25 per volume, and remittance must accompany magazines.

Forward magazines and make remittance to

STATIONERY DEPARTMENT—Pacific Gas and Electric Company
445 Sutter Street, San Francisco

Name of sender with full and complete address must be plainly marked on each package.

No magazines or remittance will be accepted after June 30th.

Ideal Vacation Spots in "Pacific Service" Territory

It is again the season of the year when the red gods call. It is the time of year when fishing rods are taken out, carefully gone over, put together and tested. Last year's flies and leaders are examined with much speculation as to whether or not they will bear, after a year's disuse, the strain of a six-pounder in swift water. It is the time of year when guns are cleaned, game laws are studied and road maps are sought. It is the time of year when a speculative eye is cast at the old bus, wondering whether or not she can pull up the eighteen per cent grades which the road maps state must be encountered. In other words, it is spring.

Spring comes around every year in pretty much the same old way, at the same old time. And yet every spring is a little different from the one that has come and gone before. A little gladder, a little warmer, a little more resistless in its call. The open road stretches out from where the city street ends and leads to— everywhere. It terminates in rest and forgetfulness, for just a little while, of the petty trivialities and cares of our work-a-day lives. For two weeks we can forget the scareheads of the newspapers announcing the latest movie scandal or the sworn confession of the King Kleagle of the Ku Klux Klan. We can forget the landlord, the butcher and the milkman, with their endless bills. For two weeks we won't hear a telephone or dodge the traffic or run for the five-fifteen.

But there are usually three questions which must be answered before the average man and his family can plan a vacation. They are: first, where to go; second, how to get there; and third, what is it going to cost?

Our Employees' Association has answered all three questions for us and is ready to direct our trip. All set? Let's go! Kindly turn to the last page of this magazine, where you will see a map of the only portion of the State of California worth looking at. In just about the center of the map, opposite the letter "E" in "Nevada," you will see a place marked

"de Sabla." Here is located P. S. E. A. Camp de Sabla.

This is an ideal, restful camp, situated at an elevation of 2,800 feet among Butte County's pine-clad mountains. By rail the journey is made to Chico, from which place the de Sabla stage leaves for the camp every day except Sunday. The railroad fare from Sacramento to Chico is \$3.18, stage fare, Chico to de Sabla, \$1.75. The best route for automobiles is via Sacramento, Marysville, Oroville and Magalia. The total distance from Sacramento is 108 miles. Supplies may be purchased at Chico. The stage driver will take your order on one day and deliver your supplies the next. If desired, meals may be obtained at the private boarding house at fifty cents per plate.

There are many interesting side trips to be taken from de Sabla. Attractive hikes along good trails lead to de Sabla Power House, Centerville Power House, Magalia and the Evening Star Mine. Autos may visit the power houses and also Big Meadows and Lake Almanor.

Excellent fishing is to be found close at hand and there is plenty of small game in the back country. Camp de Sabla affords the following equipment furnished free for your use by your association:

Tents equipped with board floors, single cots with mattresses, cook stove set up outside tent, axe for cutting firewood, broom, washtub and washboard, meat safe and shower bath.

So much for Camp de Sabla, and while we believe that as a vacation site it is hard to beat, still your association believes in offering variety and has established another camp affording an entirely different atmosphere than de Sabla. This is Camp Spaulding, situated close to our company's great storage reservoir of the same name, among the snow-clad, granite peaks of the Sierra. Spaulding Camp is 4,700 feet above the sea. It is reached by rail at Smart Station, which is but a little over a mile from camp. The round trip fare, fifteen-day ticket, from Sacramento to Smart, is \$4.40. Autos go by Auburn,

Colfax, Dutch Flat, Alta, Towle, Crystal Springs and Emigrant Gap, eighty-one miles from Sacramento.

The equipment at the camp is identical with that at de Sabla. Supplies may be obtained at Emigrant Gap, a little over two miles distant. Fresh bread may be obtained at the camp itself. Being located at a higher elevation, this camp will not be opened until early in July and the fishing will be at its best at a still later date on account of the late snows.

Hikers will enjoy trips to Bear Valley, Rucker and Blue Lakes, Lake Fordyce and Meadow Lake. Automobile trips are unlimited, for nearby are Lake Tahoe, historic Donner Lake, Truckee, Drum and Alta Power Houses.

These are the only established camps, that is to say, the only camps provided by the association with the necessary tents, beds and miscellaneous equipment. Innumerable camp sites, however, for those who prefer to depend entirely on their own resources, are distributed throughout our "Pacific Service" territory. Any variety of climate and scenery may be selected, following are a few suggestions:

Colgate Division

This is the country of the Yuba. Fish, game and attractive camp sites are limitless. Strawberry Valley, near Colgate Power House, is particularly attractive, being the center of ten mountain streams, which abound with trout. Excellent hotel accommodations may be had here for those who do not desire to camp. This country is reached by way of Marysville, Honcut, Brown, Brownsville and Clipper Mills.

San Joaquin Division

From Sonora to the summit of the Sierras is found a vacation land which is unsurpassed. Camp sites are everywhere. Hotels are to be found at Strawberry, Pine Crest and Douglas Station. There is excellent hunting and fishing. Fly fishing will be late this year on account of high water. The magnificent scenery about Kennedy Lake and Relief Reservoir rivals the grandeur of the Yosemite. On the Mokelumne River, in Alpine County, Blue Lakes offer a beautiful setting for a vacation.

Shasta Division

Here, in the northermost extremity of

our territory, is a wonderland of swift-flowing rivers and giant peaks. From Lassen's smoking crater to Shasta's base, is found every variety of scenery the vacationist can wish. Fall River, Hat Creek, the McCloud River and the Pit itself afford scenic beauty and abundant sport with rod and gun. Here an automobile is a necessity as the railroads do not reach the back country.

North Bay Division

The attractions of Marin and Sonoma are well known. Those who prefer the sea coast will enjoy Bolinas and Willow Camp, Inverness and Dillon's Beach. Mt. Tamalpais and Muir Woods are famed the world over.

San Francisco Division

San Francisco for a vacation will possibly evoke a smile from the city dweller. Those who dwell in the less populous places, however, at times yearn for the flesh pots and the bright lights of the metropolis. It would be a waste of time to eulogize San Francisco and its suburbs about the bay, what Californian does not know it? Its cool fogs and cleansing winds are more than welcome after the heat of the great interior valleys. San Francisco will welcome you.

In this brief description only the high spots of vacation suggestions have been touched upon. There are countless others, each with its individual attractions. There is not a division in our vast territory but has a suggestion to offer.

For further detailed information or for reservations at either of the established camps at de Sabla and Spaulding, get in touch with the section chairman of your Recreational Activities Committee. Following is the list:

SECTION	CHAIRMAN	HEADQUARTERS
Parent Body.....	W. D. Skinner.....	Load Dispatcher's Office.
	B. N. Merritt (Vice Chairman).	Oakland
Colgate.....	M. Bremer.....	Marysville
de Sabla.....	Jas. Fogarty.....	Camp 1, de Sabla
Drum.....	B. H. Wilcoxon.....	Drum Power House, Towle.
East Bay.....	H. M. Anderson...	Oakland.
Fresno.....	H. E. Lawson.....	Fresno.
North Bay.....	J. Fallon.....	San Rafael.
Sacramento.....	M. Wyatt.....	Winters.
San Francisco.....	E. C. Wood.....	San Francisco.
San Joaquin.....	H. T. Sutcliff.....	Modesto.
San Jose.....	F. J. Camozzi.....	Redwood City.
Shasta.....	G. R. Milford.....	Redding.
West Side.....	A. E. Jordan.....	Red Bluff.

H. S. F.

OUR "PACIFIC SERVICE" EMPLOYEES ASSOCIATION

Health Insurance

The questionnaire sent out by the special committee on the health insurance plan has been returned by 1,462 members, to date. Returns indicate that 1,414 are desirous of participation, and forty-eight do not desire to participate. 157 who desire to participate make suggestions as to details of plan. Twenty of those not desirous of participation are covered by health insurance at present time. Forty-four who desired to participate in plan desired to pay premium directly to P. S. E. A. rather than by pay-roll deduction. Mr. J. A. Johnson, chairman of the special committee working on the proposition, hopes to have a plan ready for action by the Executive Committee at their next meeting.

Educational

The Educational committee reports that great progress is being made by the steam and electrical course classes. These classes are scattered throughout the system from one end to the other. Classes have been organized at each of the district offices and at many of the power plants.

Benefit and Loan

The Benefit and Loan committee reports two deaths of members during the month whose dependents were recipients of the death benefit. The committee has been able to render a great service to members of the Association who have found themselves in need, due to illness and distress. The visiting of the sick by members has been a part of the committee's activities in all the sections.

Athletics

Nearly all sections are represented on the baseball scoreboards these days. North Bay is conducting a series of games between teams representative of the various communities in the division.

Modesto has a strong team, "the Tigers," having twice beaten the Stockton team in addition to having defeated representatives of San Francisco's finest. The Potrero gas works team succeeded in winning from Vallejo after a hard-fought game at the South Side playground on April 30th. A Tennis tournament is to be held sometime in August.

Annual Dinner

Plans are progressing for the annual dinner, which will be held in the Municipal Auditorium, San Francisco, on June 24. The committee in charge promises the most spectacular event in P. S. E. A. history. Perhaps the most interesting of the evening's events will be the competitive "stunt" contest between the various sections. From rumors that have leaked out it will be a difficult task indeed for the judges to award the fifty dollar prize to the winning section, as each "stunt" appears to be a winner. In order to stimulate original and unique ideas some of the sections are offering prizes to individuals suggesting the best plan. San Francisco has a standing offer of a ten-dollar cash prize for the best idea. At least twenty-five hundred members are expected to be present at the dinner. The slogan of the committee is:

"WE HAVE HIRED THE BIGGEST AUDITORIUM IN THE WEST—

LET'S FILL IT"

Shasta-West Side Annual Party

On Saturday, May 27th, Shasta and West Side sections will act as joint hosts at Redding. Plans call for a picnic on the banks of the beautiful McCloud River at Baird, where a picnic lunch will be served, a baseball game will be played and trips will be taken to the famous caves nearby. In the evening there will be a banquet in Redding, followed by entertainment and dancing at the Pavilion.

Tidings From Territorial Divisions

East Bay Division

Concord, situated in the center of a beautiful and highly productive agricultural section, was founded in the year 1869, due to the continued, yearly-recurring flooding of the nearby town of Pacheco, whose inhabitants were put to great expense for raising buildings. Fernando Pacheco and Francisco Galindo, to whom the land belonged, offered to lay out a town some two miles east of Pacheco and give, to those willing to transfer themselves to the new place, a certain number of lots free of charge. The plot was surveyed and laid out in lots and streets and contained twenty acres, divided into nineteen blocks and a plaza.

Among the first to take advantage of the new scheme was Samuel S. Bacon who had suffered from floods in Pacheco, where he had conducted a store, and in June 1869, had his new place of business completed. About the same time Charles S. Lohse built a blacksmith shop opposite Bacon's store, while John Brawant and George Gavin erected houses. That summer a hotel was built, also two or three saloons, a livery stable and other business establishments.

In the naming of the new town there was much controversy. To begin with,

the Spanish population and donors of the land wanted it called Todos Santos (All Saints), by which name it was recorded; the Americans, however, dubbed it "Drunken Indian" with that genius which the pioneers displayed in the science of unique nomenclature; but it was later given the name of Concord, a name that seems to be quite in keeping with the happy surroundings and peaceful atmosphere of the place.

Concord has enjoyed a steady growth until today its population numbers about two thousand. It has all the modern conveniences of the larger cities, including splendid sewer and water systems, paved streets, gas and electric lights. It is particularly fortunate in being the center of the county system of concrete highways, so that drives in all directions may be enjoyed.

The Mt. Diablo Union High School, comprising seventeen grammar school districts, is the pride of Concord. The district covers the largest area of any high school in the county and has an assessed valuation of \$13,000,000, being exceeded in this respect only by Richmond. The district was recently bonded for \$120,000 to make necessary improvements and enlargements to the school buildings, it being anticipated that the freshmen class alone at the opening of the next term will number at least 110.

Tributary to Concord are the Clayton and Ygnacio valleys, both settled by prosperous farmers whose crops from hay and grain fields, orchard and vineyard, have provided for the erection of many a beautiful home and brought prosperity to a contented community. Concord's two substantial banks, each with deposits totaling the million mark, bear testimony to this prosperity.

While agriculture is the chief pursuit, the location of the Associated Oil Company's refinery at Avon, three miles distant makes it convenient for a considerable number of people who are employed at the refinery to make their homes



The new Claremont sub-station overlooks beautiful Lake Temescal.



The warehouse at Second and Washington Sts., Oakland, is nearing completion.

in Concord. At Cowell, also three miles away, is the big plant of the Cowell Portland Cement Company, and much business from there comes to Concord.

Concord is on the line of the Southern Pacific and the San Francisco-Sacramento Electric Railroad, and is thirty miles from San Francisco.

Oakland is enjoying an era of building prosperity. New buildings are springing up everywhere. Following are a few of the larger ones:

Plans are at present being prepared for the eight story Physicians' Building to be erected on the southwest corner of Broadway and Twentieth street. Hal Gorrill, owner of this property, states that plans will shortly be completed.

The Fox Film Company has started construction on their new \$1,000,000 theatre building. The architecture will embody all the features of modern movie house design and will seat more than 3,000 people. The vision of Mr. Frank Proctor is responsible for this theatre being located in what is destined to be the new business center of the East Bay territory.

Ground breaking for the new Colonial Cafeteria will take place at an early date. This organization has outgrown its present location and accordingly purchased a very desirable corner at Fifteenth and Franklin streets.

Heald's Business College has purchased a location at the southwest corner of Nineteenth and Telegraph, where they will erect a large building on the property.

Trimming the shade trees on the streets of our California cities is a problem that requires no small amount of skill, especially in Berkeley, where civic pride in the shady avenues is marked.

How "Pacific Service" succeeded in this undertaking is expressed in this letter from the Berkeley Park Commission.

CITY OF BERKELEY
CALIFORNIA PARK COMMISSION

March 30th, 1922.

Mr. J. S. Worthington,
Pacific Gas & Electric Co.,
518 13th Street,
Oakland, California.

Dear Sir:

Relative to arrangements made with you for the trimming of the street trees in Berkeley that interfered with your wires, I wish to express on behalf of the Park Commission of the City of Berkeley, their satisfaction and appreciation of the excellent manner in which your Company has handled the trimming of the street trees. Furthermore, I personally am glad to mention the courteous and obliging manner in which your foreman, Mr. W. J. Belford, handled the work under my supervision, not only in his relations with me but also with the individual property owners.

Trusting future problems will be handled in as competent and satisfactory manner, I remain

Yours truly,
(Signed) CARL F. BIEDENBACK,
Supt. of Parks.

J. C. J.



Ground has been broken for East Bay's new headquarters building in Oakland.

Fresno Division

On Thursday April 27th, under the bluest of California skies, and flooded with the sunshine for which the Garden of the Sun is so justly famed, the 14th Annual Raisin Festival opened with a spectacular pageant which for beauty and artistry far eclipses any past efforts. Miles of beautiful floats, in which skilled artists had depicted all the lure of the Raisin Empire, were interspersed with bands from neighboring towns, fraternal orders in full regalia, squads of High School Cadets and American Legion veterans, and flower decked automobiles occupied by officials and notables of the Valley towns.

This glittering, inspiring spectacle flowed by like a river of color and flowers through the city streets, lined with a hundred thousand spectators, the greatest crowd ever assembled in Fresno. Kings County was appropriately invited to furnish the queen and Edith Meyers of Lemoore was chosen, carrying out the rendition perfectly. Douglas McLean of motion picture fame, king of the festival, drove the chariot of Apollo, typifying the ruler of the Garden of the Sun.

The pageant of the morning was followed by the annual Raisin day classic in the afternoon at Fresno's famous motor speedway, in which twelve internationally famous speed-pilots competed in a 150-mile contest with Jimmy Murphy winning first place and Frank Elliot and Harry Hertz second and third respectively. The race, which was witnessed by 35,000 spectators was marred by no accidents, but provided plenty of thrills for the speed fans. The festivities were closed by an evening of dancing, held at various places, ranging from a grand ball at the Auditorium to a street dance on Broadway.

To sum it up in a few words, this year's Raisin Day was without exaggeration the greatest, the most elaborate and the most successful of any of its forerunners, and left with all who saw it, not only the memory of a beautiful spectacle but a lasting pride in the community and industry which instituted and produced it.

E. W. K.

West Side Division

The town of Orland, G'enn County, has accomplished during the past year improvements worthy of a town of much larger proportions. It is probably the only town of its size in the Sacramento Valley that has advanced so rapidly. The town, which has a population of about 2,000, has just completed paving its streets in the business district, also three streets leading to the State highway. The last year has seen the completion of a new grammar school building, a structure doubling the capacity of the old schoolhouse. Authorization for a high school building has been granted and ground will soon be broken for this structure. Both buildings are made necessary by the continuous growth of the community.

"Pacific Service" has just completed the rebuilding of the distribution and street lighting systems in Orland and the telephone system has been enlarged. A community prosperity celebration is planned for some time in May to fittingly commemorate the achievements of the past few years.

Red Bluff, headquarters of West Side Division is destined to become the leading town of the northern Sacramento Valley. It is the junction of three state highways and the terminal of Eureka and Susanville roads, which some day will be paved. The Chamber of Commerce is made up of wide-awake citizens, quick to grasp an opportunity, and quicker in action. They have just let a contract for paving the unpaved portions of the streets necessary to join the three state highways together. This work was started April 24th and will be rushed to completion. R. W. M.

Colgate Division

Wheatland Substation is now in operation again after being under reconstruction for some time. It is now an outdoor substation with four 250-KVA Westinghouse air cooled transformers outside, with two switch cells in the station for eleven thousand volt feeders. There is also under cover a bank of 3-50 kilowatt transformers to feed the 2,300 volt circuit in town.

The Rio Oso Fruit Company have just completed the planting of 420 acres lying across Bear River from Wheatland, in cling peaches. They have also completed a bunk house, cook house, tank house and have under construction a cottage for the foreman and a barn. Needless to say "Pacific Service" has a part in this. The fruit company expect to increase their acreage to 1,000 acres in trees in another year.

The Super California Fruit Land Company are now planting 200 acres near Wheatland in grapes. This land is to be sold off in small tracts. Irrigation is done by means of "Pacific Service."

E. C. J.

San Joaquin Division

Within recent months power contracts well in excess of 1,000 horsepower have been signed by various mines located in Tuolumne County. While some of these mines are still in the prospect stage, others are proven producers. The general conviction of mining men is that Tuolumne County still holds untold mineral wealth.

Modesto's building program still surpasses its previous records. During March sixty-five permits were issued, covering construction estimated at well over a quarter of a million dollars. Included in this program are two new theaters, each with a seating capacity of approximately 1,200 people. These two show houses, together with the two which Modesto at present supports, will furnish the theatergoers of this vicinity with a great variety of high class entertainment.

On March 20th the new 600 horsepower, electrically operated gold dredge, belonging to the La Grange Gold Dredging Company, was successfully launched and put into operation with but very little ceremony. This new dredge, which is of the largest and latest Yuba type, has been in the course of construction for approximately a year, and was necessitated following the sinking of the Dredge Company's boat in January 1921. The original dredge had been in service about fourteen years in this field, and during the

last period of its career had shown the signs of continuous service. The Dredging Company's property is situated at the town of La Grange, on the Tuolumne River about thirty miles east of Modesto. The La Grange Power House, one of the smaller units of the "Pacific Service" system, was originally built to take care of the dredge load in this vicinity.

At a recent election held in the City of Oakdale, bonds in the amount of \$40,000 were passed by a majority vote of three to one for the improvement of the city streets. Bonds in the amount of \$9,000 were also voted for a new fire house. It is expected that these improvements will have a beneficial effect upon the insurance rates prevailing in that city. A visit to the City of Oakdale reveals a progressive and prosperous little community, situated in the heart of a splendid agricultural district.

The Don Pedro Dam, now being constructed by the Modesto and Turlock Irrigation Districts will be the highest in the world, measuring 285 ft. from stream bed. The north end of this dam has at present been completed and has 70,000 cu. yds. of concrete poured, with a total yardage of 280,000 necessary to complete the project. Mr. D. J. Duncanson of Duncanson & Harrelson is in charge of construction at Don Pedro.

It is expected that a new mining load will soon be served with the completion of a 20-stamp mill and the installation of a 100-horsepower electric hoist at the Moore Mining Company's property at Jackson, Amador County. The total installation will consist of motors whose aggregate capacity will be approximately 340 horsepower. Mr. Geo. F. Snyder of San Francisco is president of the company.

S. J. D.

San Francisco Division

NEW BUSINESS DEPARTMENT

Mr. O. E. Sholders has recently joined the New Business Department. It will be Mr. Sholder's duty to visit and work with the various dealers in gas appliances, expressing to them the com-

pany's desire to co-operate, acquainting them with the work done by the company in the way of advertising, and generally helping to stimulate business as much as possible.

To anyone who has not given serious thought to the possibilities of the electric range, water heater and air heater, we invite a social call on our Mr. G. W. Barker, latest addition to the New Business Department as electric domestic appliance salesman. His sales during the month of April will convince any skeptical person that the electric range and electric heater are here to stay.

We are glad to welcome Mr. W. E. Fitzpatrick, formerly employed by this company for many years, who left at the time of the war for service in France and who has again joined the force in the New Business Department as electric salesman.

Here are a few of the larger installations recently secured for "Pacific Service" in San Francisco:

Loew's Warfield Theatre, Market near Taylor, power and light, approximate load 430 horsepower.

Standard Oil Building, SW corner Bush and Montgomery, all the direct current for power, amounting to over 1,000 horsepower.

Golden Gate Theatre, NW corner Golden Gate and Taylor, approximately 222 horsepower. F. T.

GAS GENERATION DEPARTMENT

The New Business Department has inaugurated an intensive campaign for the sale of gas and electric appliances. In anticipation of the increased demand for gas, which will be felt early in the fall, the Gas Generation Department is making extensive preparations for a busy construction program which will be started in the very near future. The plans cover an entire new salt water system for washing and scrubbing the gas; additional steel tower scrubbers to take care of the increase in gas made; installation of a liquid purification plant, the Koppers System for removing Hydrogen Sulphide; rebuilding No. 1 Relief Holder; installing one large steam compressor for the city lines and other smaller units of apparatus too numerous to mention. J. M. D.

TRANSPORTATION DEPARTMENT

Accident today—safety tomorrow!

Think Safety today—no accident tomorrow!

Much easier to think and act Safety First than to make out an accident report!

There has been a slight decrease in our accidents due to the operators not insisting on their rights, i. e., letting the other fellow have the right of way. E. C. W.

Head Office

GAS SALES DEPARTMENT

That the Gas Range and Appliance Week just passed was successful in every respect is evidenced by increased sales reported by dealers in ranges and appliances and in the interest taken by the consumer in the demonstrations.

No small part of this success is due to the spirit of progressive co-operation displayed by all the industries in the state. Prominent among these is the Sperry Flour Company, who, at the beginning of the campaign, offered to furnish free of cost all the flour required for cooking demonstrations throughout the state.

On behalf of the gas industry "Pacific Service" expresses its thanks to Sperry Flour.

Mr. J. H. Gumz has recently joined the Gas Sales Department as Industrial Gas Engineer. Mr. Gumz comes peculiarly well fitted for his work as he has had a wide experience in the application of gas in factories of the East, and particularly while connected with the Public Service Company of Northern Illinois, which has been very aggressive in developing the field for industrial gas. He also has a considerable knowledge of the manufacture and distribution of gas, having been Superintendent of manufacture and distribution for the Western United Gas and Electric Company, pioneers of high pressure gas distribution.

Mr. Gumz will act in an advisory capacity to the personnel of the various divisions in the securing of additional industrial gas business, and he will give his personal attention to some of the larger industries which are not as yet users of gas from "Pacific Service." H. M. C.



⇒ *only the Sound can Endure*

The safety of a bond is not achieved by superficial restrictive provisions which specify what the funded corporation shall or shall not do. A bond is either safe or it isn't safe; and all such restrictions can accomplish is to protect and assure the continuance of present safety.

Blyth, Witter & Co., in "underwriting" bond issues, first establishes the fundamental and permanent soundness of the obligor corporation. It must be a company engaged in a sound enterprise; it must be soundly established; it must be conservatively financed; it must be efficiently managed.

Blyth, Witter & Co. never finances so-called construction or development enterprises. We never handle speculative securities. We handle only such issues as conform to conservative standards of corporation finance.

If you want to know that your money is safely invested, select your bonds from our well-balanced list of safe investments. A letter, a phone call, a personal call at our office will bring full information without obligation.

BLYTH, WITTER & Co.

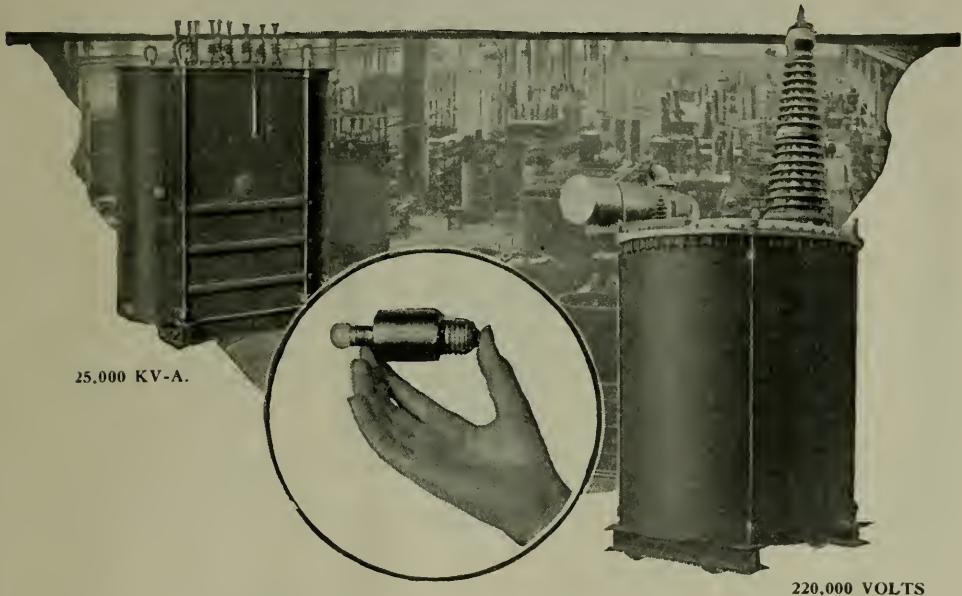
Merchants Exchange, San Francisco
Oakland Office, Easton Building

NEW YORK
CHICAGO

SEATTLE
PORTLAND

LOS ANGELES
SAN DIEGO

The Importance of Transformers to Electrical Development is so great that there must be an absolutely reliable type made for every one of a wide variety of uses



You Can Rely on Them From Toy Size to Giant

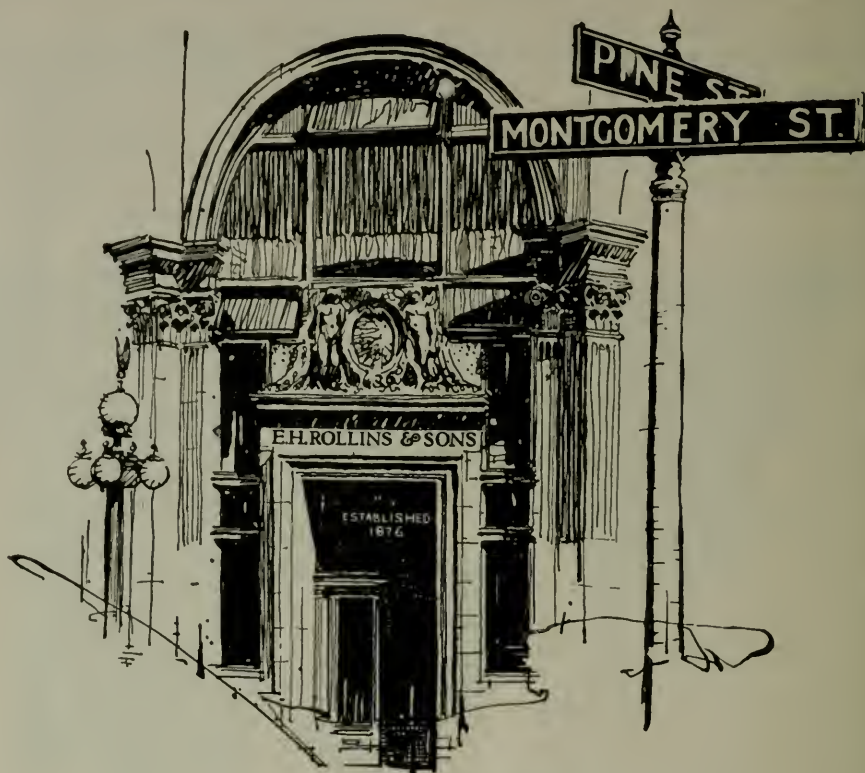
Transformers must be absolutely reliable. Their functions are too important to permit of anything less. That is why there has always been centered upon G-E Transformer design and construction the most intense concentration of engineers and highly skilled craftsmen.

This concentration has produced transformers of the widest variety from the miniature in the All-Nite-Lite to the new 220,000-volt giants to serve a Pacific Coast transmission line. And it has produced apparatus which meets every requirement of every application whether it be for operating toys and ringing door bells from house lighting circuits, for delivering proper voltages at homes and industrial plants, for controlling high potentials at great hydro-electric power stations, or for handling large energies concentrated in a single unit such as the 25,000-kv-a. units on the Detroit Edison system.

Carry your transformer problem to the nearest G-E Sales Office.

General Electric
General Office
Schenectady, N.Y. **Company** Sales Offices in
all large cities

When writing please mention PACIFIC SERVICE MAGAZINE



TO carry on hydro-electric development in California last year \$36,500,000 bonds were sold to individual investors. Of this total E. H. Rollins & Sons participated in the original underwriting of \$26,500,000, or more than 72%. The Pacific Gas & Electric Company \$10,000,000 First & Refunding Mortgage non-callable 6% bonds were among these issues, in the underwriting and sale of which this investment bond house served both its clients and the State.

J. W. KERR, President

Established 1869

C. D. STEIGER, Secretary

Steiger & Kerr Stove & Foundry Co.

OCCIDENTAL FOUNDRY

Successors to Steiger & Kerr

General Foundry Dept.

Machinery, Railroad, Architectural Castings, Bell and Spigot Castings for Gas and Water Mains, Flange Fittings for all Standard Electroliers, Gasoliers and Lamp Posts

Stove Foundry Dept.

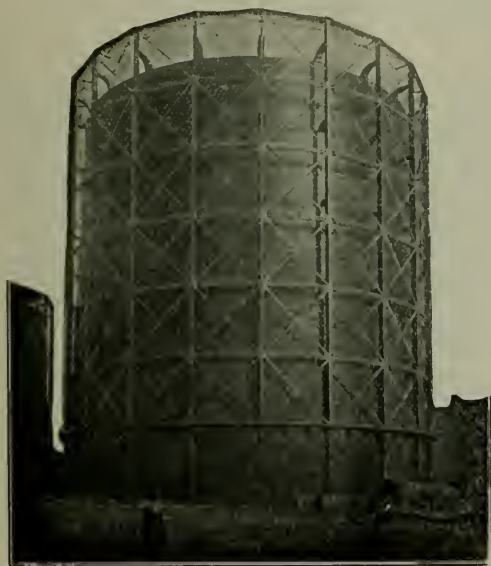
Cast Iron Cooking and Heating Stoves for Wood or Coal.

Steel Range Dept.

Steel Ranges, Gas Ranges for House, Hotel and Apartment.

Corner Folsom and Eighteenth Streets, San Francisco

TELEPHONE MISSION 250



R. D. Wood & Co.

PHILADELPHIA, PA.

Gas Holders
Water and Gas Works
Appliances
Cast Iron Pipe
Pumping Engines
Centrifugal Pumps
Hydraulic Machinery
Hydrants, Valves, etc.



ALLIS-CHALMERS MANUFACTURING CO.

MILWAUKEE, WISC.

District Office: Rialto Bldg., San Francisco, Calif.

Bulletin 1632-D Describing High Efficiency Pumping Units Free Upon Request

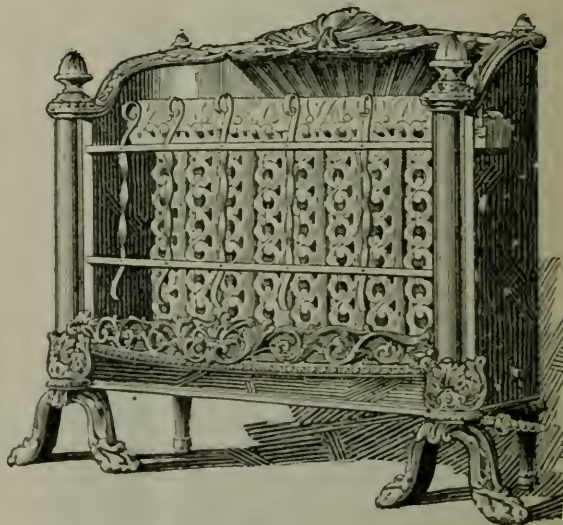
Here is a GAS HEATER that will claim your interest at once, by its unusual good looks and unique service-features first of all the

WELSBACH Gas Heater Is Self-Lighting

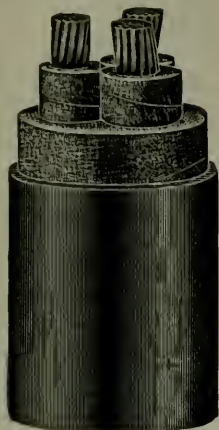
No matches; not even a pilot light. Just turn on the gas and press your finger on the pyrophoric lighter neatly concealed at the side.

IT HAS A PEDIGREE

The WELSBACH GAS HEATER is made by the WELSBACH COMPANY, for over a quarter of a century manufacturers of the best in gas mantles and gas lights. You can depend upon it for the same satisfaction you have always enjoyed from the genuine WELSBACH products.



WELSBACH COMPANY, San Francisco, California



YOUR requirements of electric wires and cables of all kinds can be promptly met from our Oakland factory.

Write our nearest office.

Standard Underground Cable Co.

Pacific Coast Department
San Francisco, Calif.

Los Angeles

Seattle

Salt Lake City



The Fulton Gas Pressure Governors For Artificial or Natural Gas

Have you seen our improved Duplex Sensitive Gas Governor, for district service? You ought to investigate it. Reduces high pressure gas to inches of water without variation. No auxiliary governors or dashpots required.

The most simple and perfect governor ever placed on the market.

See also our Reducing Governor for compressed gas. Takes any inlet pressure in pounds, and reduces to any desired outlet pressure in pounds.

More than 25 years' experience with the largest gas companies. Send for catalogue.

Chaplin-Fulton Manufacturing Co.
PITTSBURGH, PA.

What More Could Any Housewife Ask for Than This Combination Gas Range Offers?

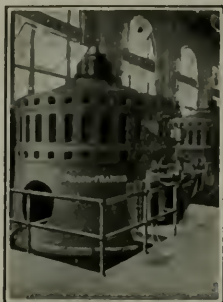


336 B.K. in Blue or Gray Enamel
Finish, Nickel Trimmed, with
Warming Oven

IF THE housewife wants instant heat for a quick meal, here it is in this efficient gas range. If she wants to keep her kitchen comfortably warm in winter, the built-in heater which burns wood or coal will provide the necessary warmth. If she wants hot water at the same time, a hot water coil may be installed. Enameled surfaces make it easy to keep clean. Good to look at, a wonderful baker, economical to operate, moderately priced.

Wedgewood
QUALITY SERVICE FUEL ECONOMY

JAS. GRAHAM MFG. CO.
531 Mission St. San Francisco



PELTON

Reaction Turbines for Low-Head Plants are of two general types, the horizontal double-runner cylindrical-case design, and the vertical single-runner design with either concrete or steel-plate spiral casing.

THE PELTON WATER WHEEL CO.

Hydraulic Engineers

2217 Harrison Street, San Francisco, Cal.

WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

RIVETED STEEL PIPE, STAND PIPES, PENSTOCKS OR ANY SPECIAL
PLATE CONSTRUCTION

ELEVATED STEEL TANKS—OIL OR PRESSURE TANKS

WATER WELL CASING—SURFACE IRRIGATION PIPE

GALVANIZED CORRUGATED CULVERTS—GUARANTEED

STEEL WIRE FENCE WITH SELF-ANCHORING STEEL POST

SAN FRANCISCO, 444 Market Street ❀ LOS ANGELES, 1758 North Broadway

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Create Economy All Along the Line

IN FIRST COST • ADJUSTING • REPAIRS • UPKEEP
USED BY 90 PER CENT OF ALL CALIFORNIA GAS COMPANIES

Furniture Exchange Bldg.
180 NEW MONTGOMERY ST.
SAN FRANCISCO

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LOS ANGELES

GAS METERS *and* TESTING APPARATUS

PACIFIC METER WORKS OF AMERICAN
METER COMPANY

1123 HARRISON STREET
SAN FRANCISCO, CALIF.

2136 ATLANTIC STREET
LOS ANGELES, CALIF.

PROTECTION

A Standard System of Protective Service Meter Switches



WK-54 Switch equipped with porcelain bus-connector block.

WK-54 Switch with meter end arranged for Westinghouse Type OA Watthour Meter.

Showing method of banking switches.

WK 54 Switch equipped with bus-connector straps.



The line of Westinghouse Type WK-54 service meter switches represents a standard system of entrance switches. These switches were designed to meet Central Station demands. Also, they afford protection to the service and watthour meters by preventing interference or tampering by any one not authorized to care for them. Testing of the meters can be done with dispatch, and without interfering with the consumer's use of his installations.

The terminal chamber of the meter and all the wiring is enclosed in a metallic enclosure under

one cover. The switch is operated from the outside so that it is unnecessary to disturb the seal on the box or open the cover to operate the switch.

There is ample space in the box for wiring.

Removable knockouts (U slides) are provided in each side of the box to permit the use of wiring troughs for banking meters.

The ends of the box are made to receive all makes of end walls or meter trims for this type of equipment.

A grounding connection is placed inside each box. Furnished in capacities of 30, 60 and 100 amperes.

Westinghouse Electric & Manufacturing Company

KRANTZ WORKS, 160 SEVENTH STREET, BROOKLYN, N. Y.

Westinghouse

Central Stations Throughout the West



Recommend EVERHOT Electric Water Heaters.

The Automatic Overheat Cutoff Switch, furnished without extra cost, eliminates the use of a thermostat as a protection to the heater.

PACIFIC MFG. & ELECTRIC CO.

Los Angeles, Calif.

San Francisco Distributor

ELECTRIC APPLIANCE COMPANY

807 Mission Street

San Francisco, Calif.



American National Bank

of San Francisco

*Invites you to use its fully
equipped banking service*

A Willing, generous service, cheerful in spirit—helpful by strength and conservative when necessary to maintain that strength.

It Is our purpose to render a service that will demonstrate our sincere interest in the financial welfare of our customers and other friends.

*Four Per Cent interest allowed in
TIME DEPOSIT DEPARTMENT*

Safe Deposit Department open on business days
from 8 a. m. to 6 p. m.

Corner

California and Montgomery Sts.



UBLIC Utility Service in a growing community demands constant plant additions for which increased capital must ever be provided. The ultimate source of this increased capital is the individual investor, and the investment banking house is the medium through which the funds of the individual investor are made available to the Public Service Corporation. Through its facilities for thorough investigation the investment banking house is able to appraise the merit or prospective bond issues, by reason of its large capital it is enabled to buy such issues in their entirety, and through its sales organization it is able to distribute them to individual investors. Thus the investment banking house and the individual investor together are the direct means by which the Public Service Corporation is permitted to serve the public.

For many years we have specialized in Public Utility Securities. Upon request we shall be pleased to submit a list for your consideration.

BOND & GOODWIN & TUCKER

INCORPORATED
AMERICAN NATIONAL BANK BUILDING
~ SAN FRANCISCO ~

LOS ANGELES

SEATTLE

PORTLAND



Pacific Gas and Electric Company Furnishes "PACIFIC SERVICE" TO OVER 604,700 CONSUMERS OF GAS, ELECTRICITY, WATER, STREET RAILWAY 1,715,959 Total Population Served in Thirty-six of California's Counties CITIES AND TOWNS SERVED BY COMPANY

	DIRECTLY		INDIRECTLY		TOTAL	
	No.	POPULATION	No.	POPULATION	No.	POPULATION
Electricity	170	1,117,541	61	156,411	231	1,273,952
Gas	57	1,127,609	2	8,600	59	1,136,209
Water (Domestic)	18	61,719	8	15,488	26	77,207
Railway	1	65,908			1	65,908

Place	Population	Place	Population	Place	Population	Place	Population
*Alameda.....	28,806	*El Verano.....	400	*Meridian.....	200	*San Leandro....	5,703
*Albany.....	2,462	*Emeryville.....	2,390	*Millbrae.....	300	*San Lorenzo....	500
*Alvarado.....	1,000	*Escalon.....	600	*Mills.....	400	*San Martin.....	250
*Alviso.....	517	*Esparto.....	200	*Mill Valley.....	2,554	*San Mateo.....	5,979
*Amador City..	377	*Fairfax.....	250	*Milpitas.....	300	*San Pablo.....	500
*Anderson.....	750	*Fairfield.....	1,008	*Mission San ..		*San Quentin....	3,000
*Angel Island..	500	*Fair Oaks.....	300	*Modesto.....	500	*San Rafael.....	5,512
*Antioch.....	1,936	*Fall River Mills	300	*Mokelumne Hill	900	*Santa Clara....	5,220
*Aptos.....	300	*Farmington....	300	*Monterey.....	5,479	*Santa Cruz.....	10,917
*Arbuckle.....	900	*Felton.....	300	*Morgan Hill....	646	*Saratoga.....	8,758
*Atherton.....	500	*Folsom.....	2,000	*Mountain View	1,888	*Sausalito.....	500
*Auburn.....	2,289	*Forestville....	250	*Mt. Eden.....	1,000	*Sebastopol.....	2,790
*Barber.....	500	*Fresno.....	45,086	*Napa.....	200	*Shasta.....	1,493
*Belmont.....	375	*Gilroy.....	2,862	*Nevada City....	6,737	*Shellville.....	200
*Belvedere.....	616	*Glen Ellen....	1,000	*Newark.....	1,782	*Sheridan.....	250
*Benicia.....	2,693	*Gonzales.....	500	*Newcastle.....	500	*Smartsville....	300
*Ben Lomond...	400	*Grass Valley..	4,006	*Newman.....	750	*Soledad.....	400
*Berkeley.....	56,036	*Gridley.....	1,636	*Niles.....	1,251	*Soquel.....	400
*Biggs.....	683	*Grimes.....	500	*Novato.....	400	*Sonoma.....	801
*Bolinas.....	200	*Groveland.....	500	*Oakdale.....	1,745	*Sonora.....	1,684
*Brentwood....	400	*Guerneville...	800	*Oakland.....	216,261	*South San Francisco	4,411
*Broderick....	700	*Hamilton City.	250	*Oakley.....	200	*Standard.....	500
*Burlingame...	4,107	*Hammonton....	500	*Occidental.....	600	*Stanford Uni-	
*Byron.....	350	*Hayward.....	3,487	*Orland.....	1,582		2,700
*Campbell.....	600	*Hercules.....	373	*Oroville.....	3,340	*Stockton.....	40,296
*Capitola.....	300	*Hillsborough..	931	*Pacheco.....	300	*Suistun.....	769
*Carmel.....	638	*Hollister.....	2,781	*Pacific Grove..	2,974	*Sunol.....	350
*Cement.....	1,000	*Honcut.....	500	*Paradise.....	500	*Sunnyvale.....	1,675
*Centerville...	1,000	*Hughson.....	250	*Patterson.....	694	*Sutter City....	250
*Ceres.....	637	*Jone.....	1,000	*Penn Grove....	200	*Sutter Creek...	920
*Chico.....	9,339	*Irvington.....	1,000	*Penryn.....	250	*Tehama City...	196
*Colfax.....	573	*Jackson.....	1,601	*Perkins.....	300	*Tiburon.....	400
*College City..	250	*Jamestown....	750	*Petaluma.....	6,226	*Tracy.....	2,450
*Collinsville..	200	*Kennett.....	464	*Piedmont.....	4,282	*Tres Pinos.....	300
*Colma.....	1,500	*Kentfield.....	500	*Pike City.....	200	*Tuolumne.....	1,500
*Columbia.....	200	*Kenwood.....	300	*Pinole.....	567	*Turlock.....	3,394
*Colusa.....	1,846	*Kewask.....	200	*Pittsburg.....	4,715	*Vacaville.....	1,254
*Concord.....	912	*King City.....	1,048	*Pleasanton....	991	*Vallejo.....	21,107
*Cordelia.....	300	*Knights Ferry.	200	*Port Costa.....	900	*Vina.....	300
*Corning.....	1,449	*Knights Land-		*Princeton.....	300	*Vineburg.....	200
*Corte Madera.	607	ing.....	400	*Red Bluff.....	3,104	*Warm Springs.	200
*Cotati.....	200	*La Grange.....	200	*Redding.....	2,962	*Waterford.....	250
*Cottonwood...	500	*Lathrop.....	600	*Redwood City.	4,020	*Watsonville...	5,013
*Coyote.....	500	*Lewiston.....	200	*Richmond.....	16,843	*Wheatland....	435
*Crockett.....	1,500	*Live Stock....	300	*Rio Vista.....	1,104	*Williams.....	650
*Crow's Landing	300	*Livermore....	1,916	*Ripon.....	500	*Willows.....	2,190
*Daly City.....	3,779	*Lomita Park..	600	*Rockbank.....	200	*Winters.....	903
*Danville.....	400	*Loomis.....	500	*Rodeo.....	300	*Woodland.....	4,147
*Davenport....	300	*Los Altos.....	500	*Roseville.....	4,477	*Woodside.....	300
*Davis.....	939	*Los Gatos.....	2,317	*Ross.....	727	*Yolo.....	350
*Decoto.....	300	*Los Molinos..	200	*Sacramento....	65,908	*Yuba City.....	1,708
*Del Monte....	300	*Madison.....	300	*Salinas.....	4,308		
*Denair.....	200	*Manteca.....	1,286	*San Andreas...	1,183		
*Dixon.....	926	*Mar Island....	600	*San Anselmo...	2,475		
*Drytown.....	200	*Martinez.....	3,858	*San Bruno.....	1,562		
*Duncan's Mills	200	*Mayfield.....	500	*San Francisco.	506,676		
*Durham.....	250	*Mayfield.....	1,127	*San Jose.....	39,642		
*Eldridge.....	500	*Menlo Park....	900	*San Juan.....	350		
*El Cerrito....	1,505						
*Elmira.....	350						

Unmarked—Electricity only. —Gas, Electricity and Water. —Electricity supplied through other companies.
 *Gas only. —Gas, Elect. and St. Railways. *—Gas supplied through other companies.
 —Gas and Electricity. —Electricity and Water. —Water supplied through other companies.

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Over 8,000 employees in all departments.
 Serves over 50% of California's inhabitants.
 Paid the State of California over \$2,630,000 covering taxes for 1921.
 Operates one of the greatest power systems of the world involving 9,971 miles of High Tension Transmission Lines and Distribution Systems, and 32 electric generating stations having an installed capacity of 481,836 horsepower.
 Operates 28 Hydro-Electric Plants. Operates 4 Steam Electric Plants.
 Operates 19 Gas Plants.



The successful **TIMBER CRUISER** must have a thorough knowledge of all the elements that enter into the value of standing timber. Only a background of wide experience qualifies him to become an expert. Large sums are invested in timber tracts upon the accuracy of his estimates.

Your Search for well-secured Bonds

WHAT a timber cruiser is to a lumber company The National City Company's representatives are to the investor.

Their knowledge and experience qualify them not only to pass upon bonds as an investment but to advise in particular as to the bonds suited to a definite investment requirement.

Every bond listed on our Current Purchase Sheet has passed careful investigation and is considered worthy of our recommendation.

Current Purchase Sheet mailed on request.

The National City Company

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BONDS

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